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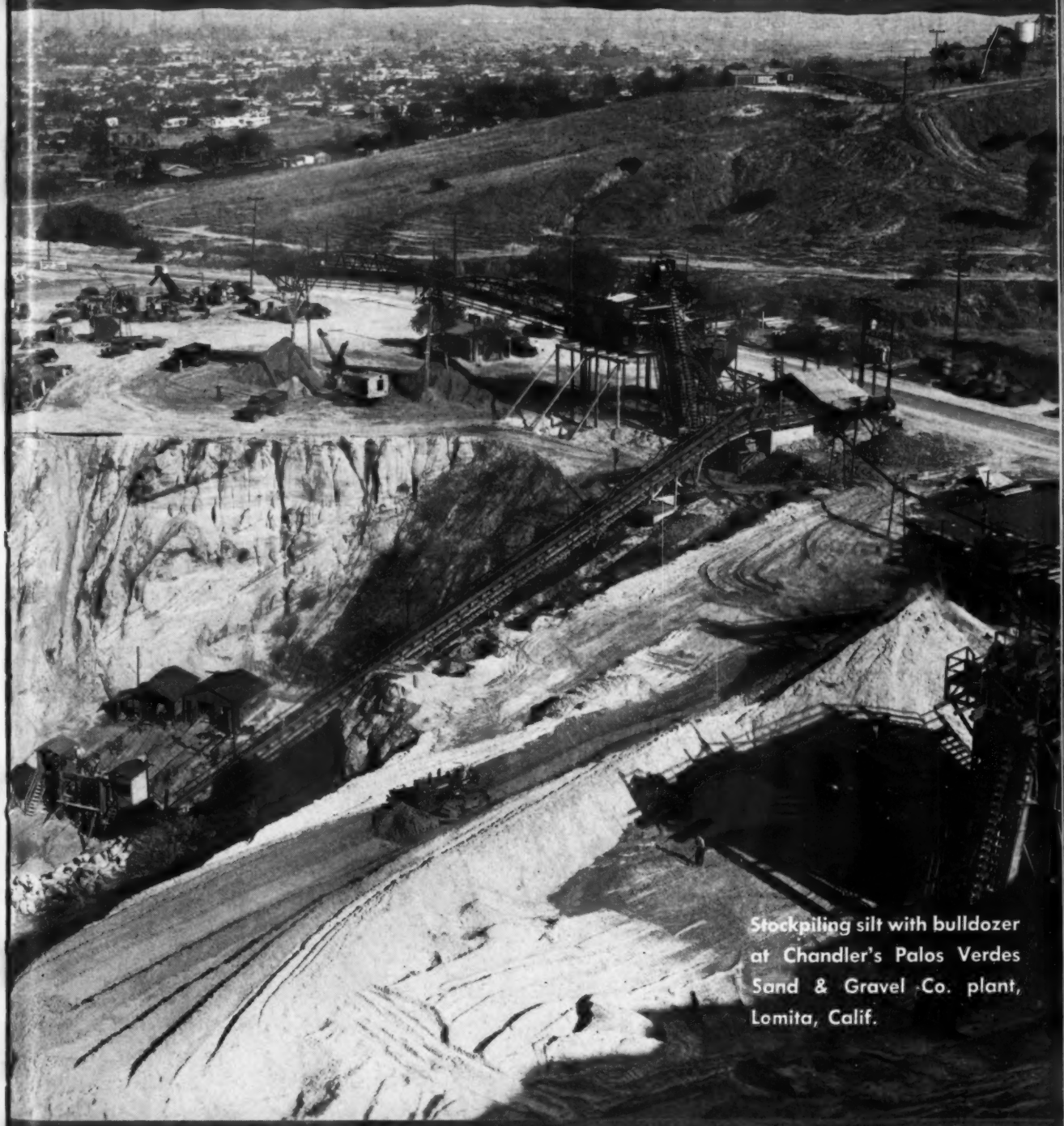

Stockpiling silt with bulldozer at Chandler's Palos Verdes Sand & Gravel Co. plant, Lomita, Calif.

Vol. XLI February, 1947 1 Number 2

Rock Preparation Savings with Bucyrus-Erie Blast Hole Drills

These are some of the reasons why quarry operators everywhere are keeping their rock preparation costs consistently low with Bucyrus-Erie—why it will pay you to investigate these models: 22-T for 5⅝" and 6" holes; 27-T for 6" and 6⅝" holes; 29-T for 6⅝" to 9" holes; 42-T for 9" to 12" holes.

FAST DRILLING— Accurately timed, powerful drilling blows give you more footage every hour.

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QUICK ACCURATE CONTROL— Conveniently arranged operating and propelling levers eliminate waste motions of the operator.

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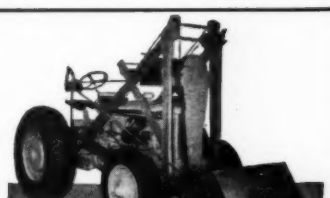


Front - End

LOADERS

For Industrial Tractors

Extensible Booms, ⅝-cu. Yd., Bucket 8-foot lift, Backfiller Blades

White Mfg. Co.

ELKHART INDIANA

All You Need is a LICENSE TAG—

—to Haul on the Highway with MISSISSIPPI WAGONS!

* * *

Yes—and Mississippi Wagons are the ONLY hauling units of their type on which a license tag can be used!

Four-axle construction, made possible by the weight-transfer feature found exclusively on Mississippi Wagons, is the reason for their ability to operate efficiently, legally, and economically both ON and OFF the highway.

Four axles not only provide maximum flotation over soft ground on construction work, but serve to reduce axle-loadings for road and street travel. As a result, the Mississippi Wagon is the only bottom-dump hauling unit powered by a heavy industrial tractor that can haul payloads of 27,000 pounds on highways without exceeding the 18,000-pound axle-loading limit set by most states.

With all-round performance like this available, why make or carry a double investment in hauling equipment? Let a single investment in MISSISSIPPI WAGONS put you in a position to handle both construction and long-haul jobs . . . at costs that will enable you to meet and beat tough competition in the big days ahead.

COMPARE THESE FIGURES WITH YOUR PRESENT COSTS FOR HIGHWAY HAULING!

Following are the approximate costs per ton-mile for hauling with Mississippi Wagons:

LENGTH OF HAUL ONE WAY	TONS A DAY PER WAGON	COST PER TON-MILE
5 miles	202	3.5¢
10 "	115	3.1¢
15 "	81	2.9¢
50 "	27	2.6¢

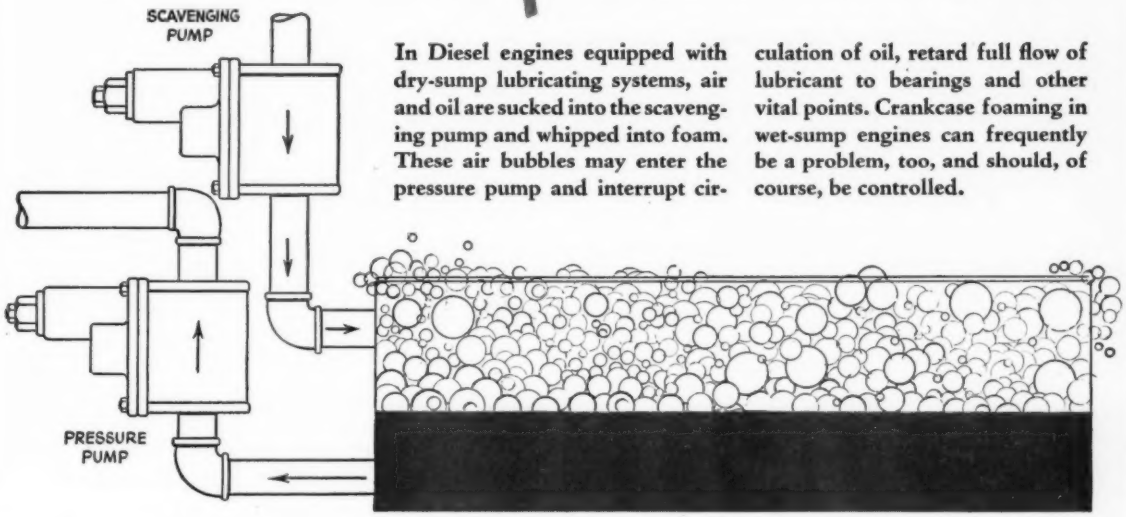
The figures are based on a 10-hour day, an average speed of 20 m.p.h., payloads of 27,000 pounds, 10 minutes loading and dumping time per trip, and a total daily cost of $35.00 per Wagon, covering fuel, lubricants, driver's wage (average), reserves for depreciation, repair parts and labor, tire wear over abrasive concrete roads, insurance, social security, and miscellaneous expense.

M-R-S MANUFACTURING COMPANY
JACKSON AND FLORA, MISSISSIPPI

MISSISSIPPI WAGON *The World's Most Modern Hauling Unit*

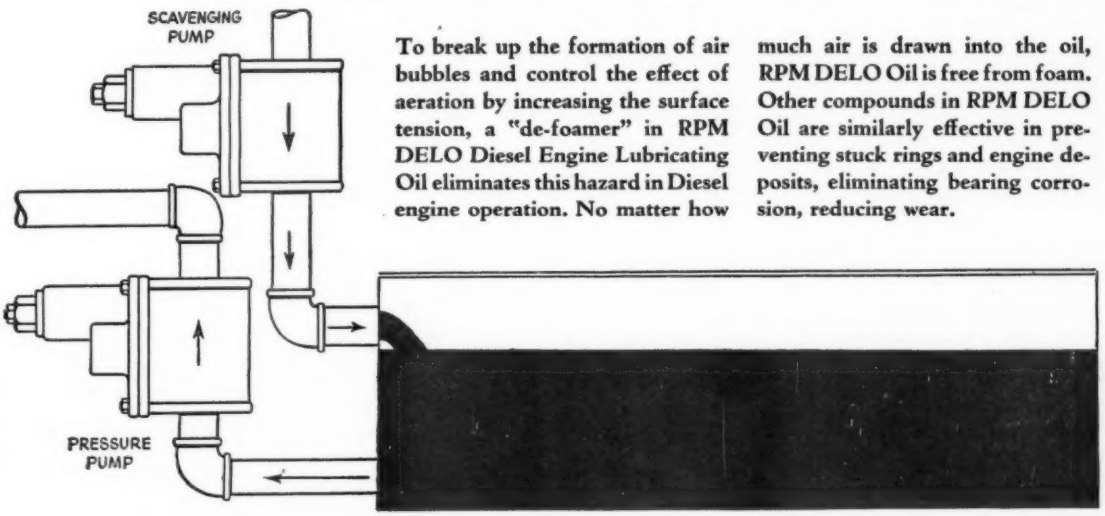
Diesel Engine DANGER points

AIR BUBBLES ENDANGER OIL CIRCULATION



In Diesel engines equipped with dry-sump lubricating systems, air and oil are sucked into the scavenging pump and whipped into foam. These air bubbles may enter the pressure pump and interrupt circulation of oil, retard full flow of lubricant to bearings and other vital points. Crankcase foaming in wet-sump engines can frequently be a problem, too, and should, of course, be controlled.

RPM DELO OIL PREVENTS CRANKCASE FOAMING



To break up the formation of air bubbles and control the effect of aeration by increasing the surface tension, a "de-foamer" in RPM DELO Diesel Engine Lubricating Oil eliminates this hazard in Diesel engine operation. No matter how much air is drawn into the oil, RPM DELO Oil is free from foam. Other compounds in RPM DELO Oil are similarly effective in preventing stuck rings and engine deposits, eliminating bearing corrosion, reducing wear.

To match the fine performance of RPM DELO OIL, use these equally efficient companion products from the same famous "RPM" line—RPM HEAVY DUTY MOTOR OIL—RPM COMPOUNDED MOTOR OIL—RPM GEAR OILS AND LUBRICANTS—RPM GREASES. For additional information or name of your distributor, write any of the companies below:

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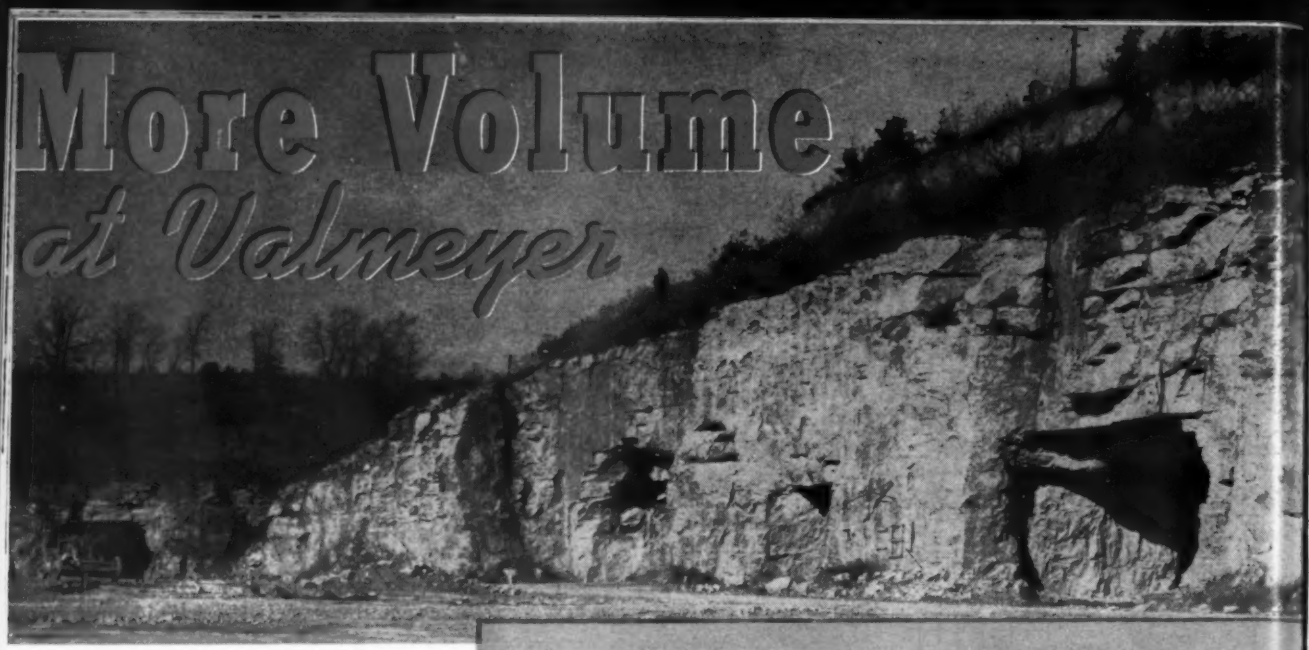
DIESEL ENGINE RPM DELO LUBRICATING OIL

More Volume at Valmeyer



Modern excavating and haulage equipment plus refinement of the general mining system have contributed heavily to progress at Columbia Quarry Company's Valmeyer, Illinois, underground workings, which now cover about 100 of the company's 1400-acre high-calcium limestone holdings at the Mississippi River valley site.

THE DIFFERENCE between the 300,000 tons of high calcium limestone produced in 1929 at the Valmeyer, Illinois, underground mine of Columbia Quarry Company and the 600,000 tons produced at the same workings in 1946 reflects the steady changes made in quarrying methods since EXCAVATING ENGINEER first described the Valmeyer operations in its October, 1929, issue.

At that time the underground operations were characterized by use of 1½ cu. yd. electric shovel for loading, track haulage was used with gasoline locomotives as the prime movers, and the basic chamber of the room-and-pillar system employed in the initial advance was 20 ft. high and 50 ft. wide. Today, in contrast, the shovel size has been increased to 2½ cu. yd., modern tractor-trailer haulage units have replaced track haulage, and the mining system employs a standard room of 26 ft. by 60 ft. in the first advance.

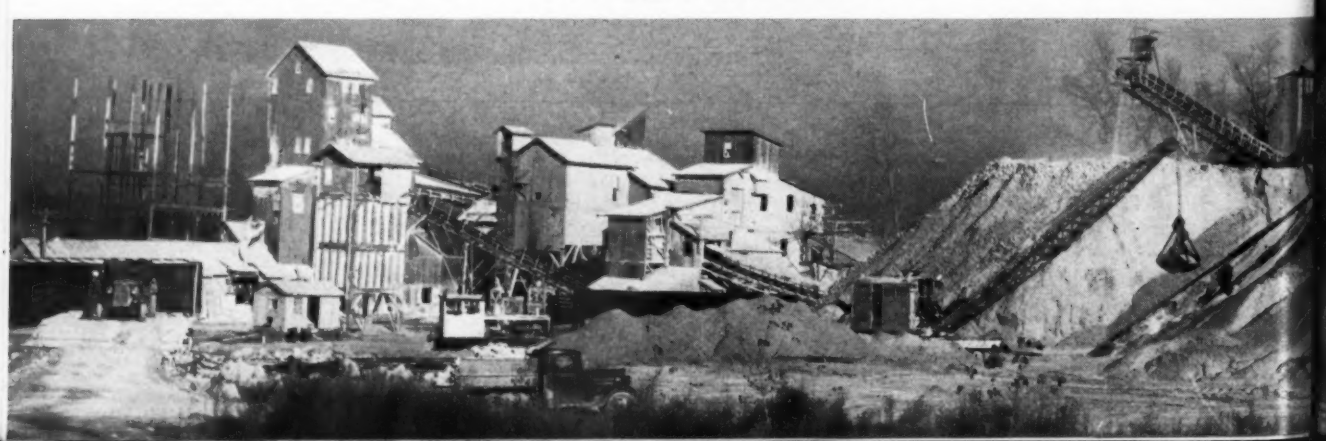
The fact that the larger size room was found to be safe and practical permitted use of larger size loading unit, and in 1942 a new 2½-cu. yd. shovel, a Bucyrus-Erie 54-B Ward-Leonard electric with special 22-ft. boom and 15-ft. dipper sticks, was purchased. This year further modernization was carried out with the purchase of three U-90-T Autocar gasoline trucks and three TR-15 Easton trailers of 20 ton size for hauling stone to the primary crusher.

The new tractor-trailers replace smaller truck haulage equipment which in turn had taken the place of the track haulage system. With the 54-B shovel and tractor-trailer combination, output of rock delivered to the crusher is normally in the neighborhood of 180 tons an hour. The mine and plant work two eight-hour shifts five and one half days each week.

• General view of the aboveground installation of the Valmeyer plant. The mine is located to the right of these installations.

Character of Stone

The stone produced at Valmeyer is of a unique character because of its exceptionally high calcium content, and for that reason is sold primarily as agricultural limestone and fluxing stone. Analysis shows the stone to be 99.60% total calcium and magnesium carbonates of which from



• These entrances to the underground quarry at Valmeyer were cut into the limestone outcrop on the south side of the ridge in which the mine is located.

one to two per cent is magnesium carbonate, less than one tenth of one per cent silica, and the balance other insolubles, such as iron and aluminum. The stone has a buff color which is attributed to leaching of iron oxide throughout the seam. From 40 to 50 per cent of the quarry's total output goes into agricultural stone uses, while another 20 to 30 per cent is sold as fluxing stone to iron and steel industries at E. St. Louis and Granite City, which are about 30 miles north. Other markets include feed and filler uses. The stone is not well suited for aggregates because of its softness, although a small amount is used locally for highways. In addition, the quarry recently supplied a run-of-shovel rip rap order for use on a railroad grade. The exceptionally low silica content of the stone also makes the Valmeyer operation unusual because stone of this character does not produce anywhere near the amount of equipment wear ordinarily associated with quarry operation. Drill steel and shovel dipper teeth stand up for exceptionally long periods and as a consequence no hard facing or building up of such parts is done.

The Valmeyer workings were opened more than 40 years ago as an open quarry, but when prohibitively deep overburden was encountered, operations were changed to underground to eliminate excessive stripping costs. The workings are in what is known as the Valmeyer anticline of the Kimmswick limestone which outcrops at Valmeyer on a bluff overlooking the Mississippi river some 30 miles downstream from St. Louis, where the main offices of Columbia Quarry Co. are located.

The Kimmswick formation is a massive coarse crystalline stone of Ordovician age characterized by the scarcity of both horizontal and vertical bedding planes. The formation dips sharply as you go eastward and in the Salem-Centralia oil field of central Illinois where it is referred to as the Trenton limestone. It occurs at about 400 ft. and is one of the principal oil horizons of the field. The formation is also an oil producer some 20 miles north of Valmeyer in what is known as the Duqo field.

The Valmeyer mine is cut into a ridge of this outcrop, with openings on both sides of the ridge. These openings provide plentiful ventilation and a certain amount of light, but not enough to permit operation without artificial illumination.

Ventilation of Mine

The mining system used has resulted in enough movement of air to permit use of internal combustion trucks in haulage and tractors for clean up work. However, preparations have been made for forced ventilation as the workings penetrate into the hill and beyond the range of natural draft ventilation.

The stone seam is roughly 56 feet thick, is covered by overburden ranging from 20 to 350 ft. thick, and is underlain by a ledge of flinty, cherty limestone. The floor level is kept about two feet up in the seam to maintain stone purity, which might otherwise be jeopardized by intrusion of stone from the underlying seam.

When the workings were first taken underground, the mine was opened on an irregular room-and-pillar system, but was later laid out for regular chambers on ap-

• Bucyrus-Erie 54-B Ward-Leonard electric 2½-cu. yd. shovel handles loading operations inside the mine. The shovel is equipped with special short boom and sticks for underground work. Stone is loaded to one of three Easton trailers drawn by Autocar gasoline trucks which haul rock to primary crusher. Haulage roads are kept oiled and smooth to achieve maximum haulage speed.

proximately the strike or dip of the seam. First rooms were 17 ft. high and 36 ft. wide, but as conditions were found favorable, the dimensions were expanded, first to 18x40, then to 18x44, later to 20x50, and in 1942 to the present 26x60 size.

Rooms of this size are cut in the bottom of the seam in the initial advance, from 13 to 15 feet of stone being left in the roof for later recovery. After all the stone is taken out, the permanent room height is in the neighborhood of 40 feet, with a permanent roof about 15 ft. thick.

Just the reverse of this procedure will be used in a new section of the mine being opened at the south end of the property where a ravine separates the ridge into distinct sections. Here the initial advance will be made in the top of the seam, keeping the extra stone below rather than above and eliminating the necessity for making and scaling two ceilings.

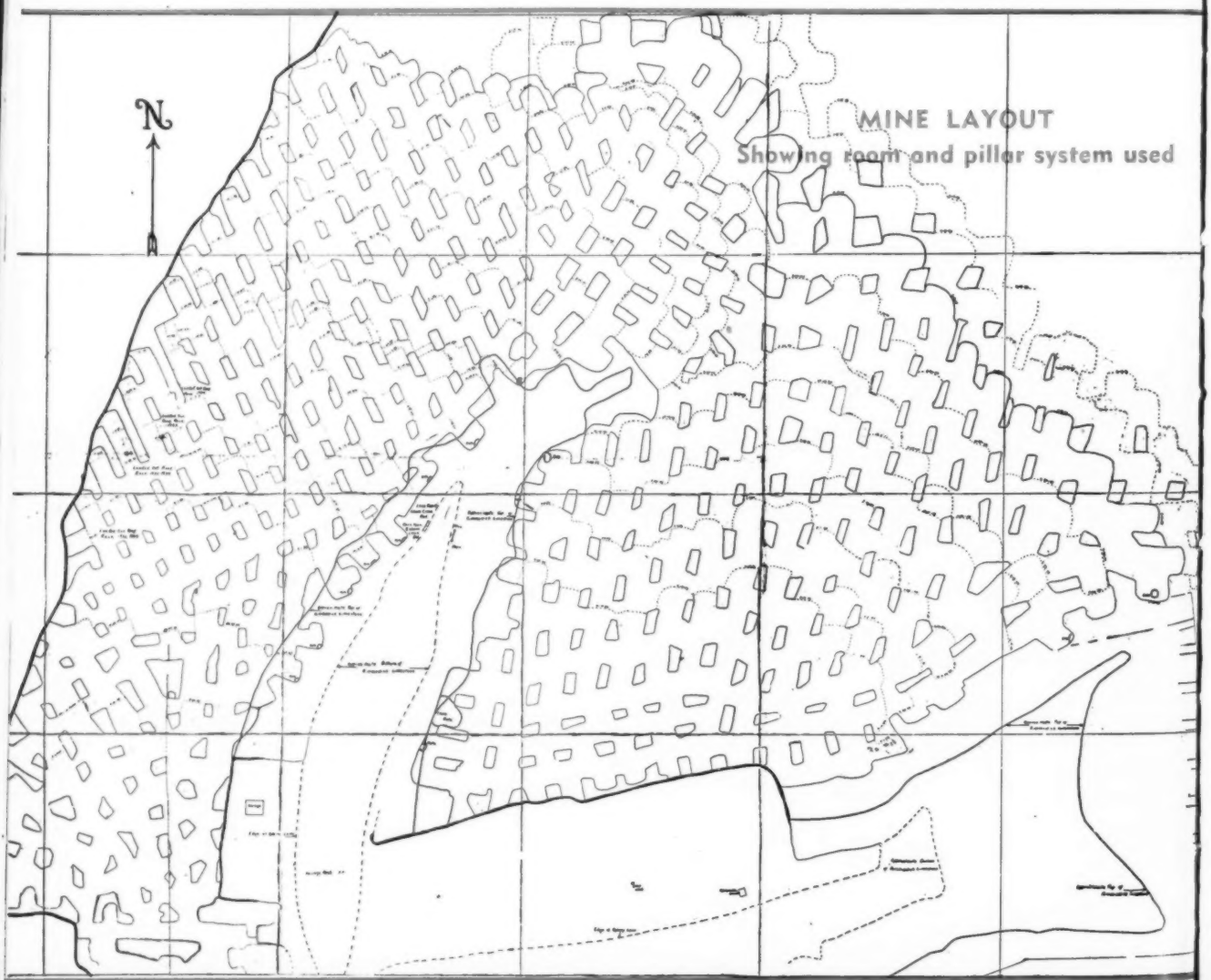
Experience showed that shooting the extra rock out of the roof resulted, largely because of the stone's massive character, in too much oversize, which meant much secondary blasting. This was a disadvantage which outweighed the fact that the stone was easy to drop from the ceiling. This difficulty, it is anticipated, will not be encountered when the extra stone is broken in the floor rather than in the roof, and the result will be a more economical operation because much roof scaling and all secondary blasting can be eliminated.

Experiments on Shooting

Except for the oversize problem encountered in taking rock out of the ceiling, the slabbing system of shooting used in the mine has proved highly successful, although experiments are presently being conducted by two explosives manufacturers in cooperation with the quarry management to make further improvements. The experiments involve use of a V-cut system of drilling together with a delay-type of electric exploder in an effort to bring down at least half a room—or an entire room, if possible—in a single shooting.

The present system employs seven column-held Gardner-Denver AF-89 drifter-type drills using Crucible Steel Co. 1¼-in. hollow round drill steel and powered by air carried by lines from receivers in the mine. The 25-ft., 4-in. diameter columns are equipped with three-foot arms. In the normal 60-ft. room, 22 to 24 lines of five 20-ft. holes are drilled, the lines spaced three to 3½ ft. apart, and the individual holes spaced six ft. apart in the line.

An average of from two to 2½



holes per hour are drilled by each drill, to which a driller and a helper are assigned. The bottom two holes in each line are drilled from the mine floor, the top two from a 20-ft. scaffold, and the intermediate one, or two holes, are drilled from a scaffold of approximately 10-foot height. Two set-up men are also assigned to each drilling crew; these men assist with moving and placing scaffolds and drilling equipment so that there is a minimum of lost time due to moves.

The dynamite used for blasting the stone is of the bulky, high stick-count type corresponding to about 35% gel. This type of explosive is used because it permits spreading throughout the entire length of the hole, producing superior fragmentation. The dynamite, measuring 8 in. by 1⅛-in., is an American Cynamid and Chemical Co. product. Equitable Powder Co. detonators are used.

Under the present system, normally only one line of holes is shot at a single time, although two lines have, on a few occasions, been shot at once. Both the loading and the shooting are carried on during the regular working shifts. This is made possible by the fact that the large number of different working locations in the mine permits ample space to be maintained between shooting and stone loading operations.

In addition to all the stone in a single room, either the ends or the beginnings of cross cuts are also drilled and shot, so that the average working place contains the equivalent of 1½ rooms of stone when the shovel moves up to load the material out. Before this is done, however, roof scalers go over the entire roof and wall surfaces, knocking down all loose rocks and particles. It has been found that very little rescaling is necessary because the stone is not given to sloughing or "working."

Loading Out Stone

With the rock broken and the ceiling and walls properly scaled, the Bucyrus-Erie shovel moves up to load out the stone to the Autocar-Easton trailer combinations for hauling to the primary crusher. When the mine was visited last fall, the shovel had loaded out much of the stone in one of the rooms and was working toward the face which later would become an opening into a new room. Trailers were spotted by being backed in, and the shovel was making approximately a 90° swing on each pass.

The shovel, which is manned by an operator and an oiler, averages an output of 180 tons per hour, which represents an increase of 80 tons per hour over the average output of the 1½ cu. yd. Bucyrus-Erie 30-B electric shovel which was used for loading from 1927 until 1942, when the new shovel replaced it. The smaller shovel, since it was taken out of the heading, has not been idle, however, and at the time of our visit was digging out the stone at the new south-end mine entrance mentioned earlier. Stone from that source was loaded to four 1½-ton dump trucks, three Chevrolets and a Ford, which dumped the stone to railroad cars at the plant siding from a ramp constructed there. The rock supplied a rip rap order for use on a railroad grade to prevent washouts.

For loading out stone too close to the face for the 2½ cu. yd. shovel, a Bucyrus-Erie Dozer-Shovel mounted on an International TD-9 TracTracTor is

• (Above) Column-held Gardner-Denver drifter-type drills are used to drill blast holes. Upper holes are drilled from 20-ft. scaffold as shown. (Below) Bottom holes are drilled from mine floor. A driller and a helper man each drill, with two set-up men filling out the four-man drilling crew.

• (Above) New heading now being made is in a separate ridge south of the main workings. A 1½-cu. yd. Bucyrus-Erie 30-B electric shovel, which was used as a loader in the mine for some 15 years, loads out stone in a new entrance. (Below) Rock from the new cut is carried by trucks and ramp-loaded to cars to fill a shovel-run riprap order.

• (Below) International TD-18 tractor with Bucyrus-Erie Bullgrader is one of two tractor units that handles clean-up work in the mine as well as such outside jobs as the grading operation shown here.

used. The Dozer-Shovel loads the stone to dump trucks after the electric shovel and the Autocars have moved on to a new working place. In addition to this work, the Dozer-Shovel is also used for stock piling and for clean-up work as a bulldozer, for which purpose a bulldozer blade replaces the bucket on the rig.

For pushing up blasted stone toward the rock face and for grading and road maintenance as well, an International TD-18 TracTrac-Tor with Bucyrus-Erie Bullgrader is used. Another use for this unit is pushing into piles loose stone "scared up" throughout the mine.

Haulage Roads in Mine

Haulage roads in the mine are well maintained, and, until the early stages of the recent war, were regularly oiled with crude oil from the nearby Waterloo (Ill.) oil field. When these wells played out, and because restrictions made other oils impossible to get, oiling of the roads had to be abandoned. Instead they were dragged to keep them smooth and, from time to time, were watered. Since the war's end, the haul roads are again oiled except for the last 300 feet near a rock face being worked. This is not oiled because flying rock from blasting operations and frequent traversing by tractors make oiling of little value.

All loading, clean-up, and hauling equipment used in the mine is maintained regularly, a half-hour per shift being assigned for this purpose. Shovels are maintained in two separate periods for day operation, 15 minutes before the shift and 15 minutes at the end. For night operation, a half hour prior to the shift is devoted to greasing, oiling, and electrical maintenance. Standard Oil products are used exclusively for lubrication.

Preparation of Stone

The primary crusher is a No. 15 Allis-Chalmers type N gyratory and is set down in solid rock below the base of the mine on the western side of the outcrop. The stone mined at this point is about 50 ft. above ground elevation. This crusher was installed late in 1942 and replaced a No. 12 N of the

same make. The old crusher, however, had been set up on the opposite side of the haul road, which meant that it could continue to operate during the entire period of the installation of the new unit and the only time lost was the time of the operating change-over.

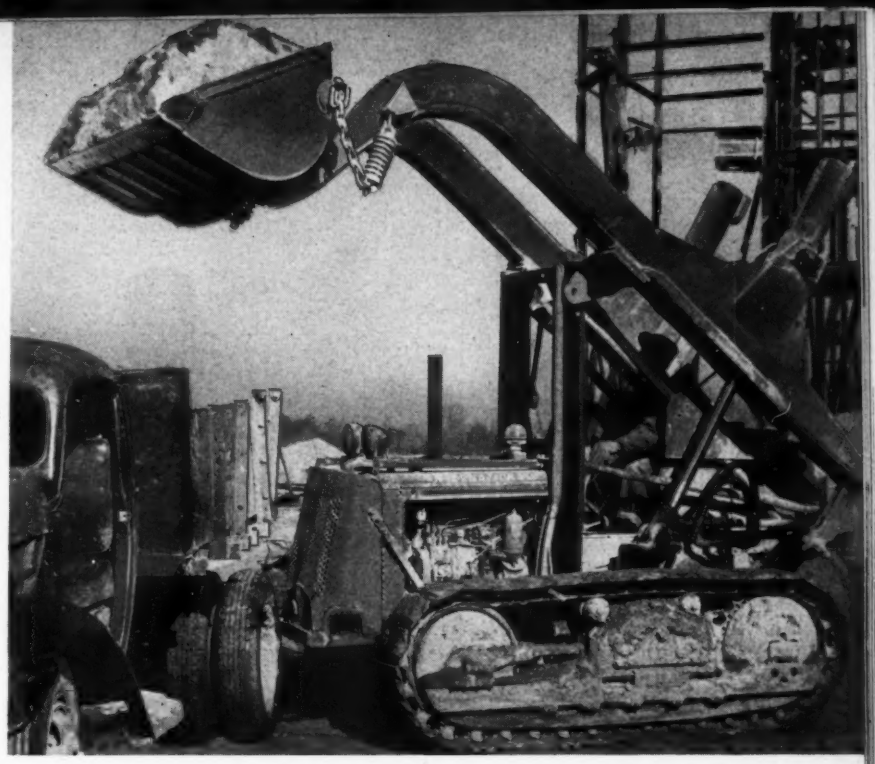
Under the present method of operation, stone from the primary crusher is discharged to a 36 in. Stephens-Adamson belt conveyor of about 50-ft. length, the head pulley of which is of the Dings magnetic type which separates the scrap iron, bolts, drill steel, etc., which is then discharged off to one side. The stone from the conveyor empties onto a Stephens-Adamson two-deck vibrating screen, 4 ft. by 10 ft. in size, the top deck has 1½-in. square openings. The bottom deck is a No. 4 mesh, the throughs of which go on an 18-in. belt conveyor out to storage as ag limestone. Oversize goes on a 36-in. Stephens-Adamson belt conveyor to a surge pile from which the stone is withdrawn in a feeder to a tunnel below and thence to the plant, where it is further processed.

Either the "between-decks" material or oversize stone can be sent by an 18-in. belt conveyor to a bin to be ground into agstone by an American Pulverizer Co. 30″x40″ hammermill. This material is fed into a 16″ elevator which lifts the finished product onto the belt conveyor just mentioned for carrying to storage. The ag limestone in this storage is recovered by means of an Ohio locomotive crane equipped with a 1½ cu. yd. Blaw-Knox clamshell, which loads the stone into trucks or railroad gondola cars.

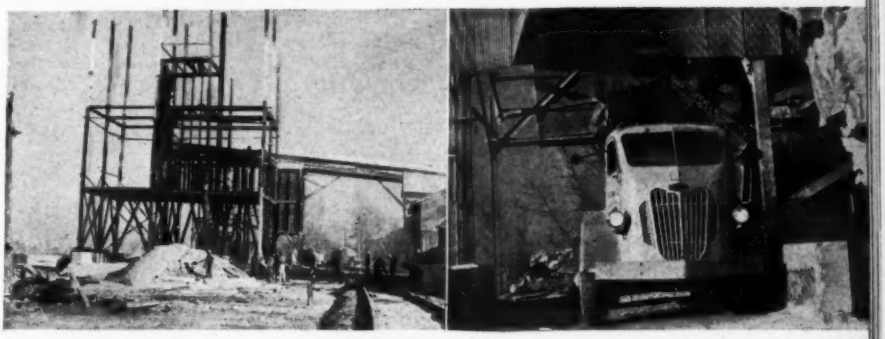
From the surge storage, which holds 12 to 13 hundred tons, stone is withdrawn as needed by a Stephens-Adamson feeder and a 30-in. belt conveyor about 240′ long to the plant, where it is screened and processed.

One of the principal products of the plant is fluxing stone of 4½″ to 2¼″ size, which is carried to railroad cars by an Austin-Western 24-in. belt conveyor. Similarly the 4½″ to 3″ and the 3″ to 2¼″ can also be loaded as finished products for certain customers. The 2¼″ to 1″ is separated and goes

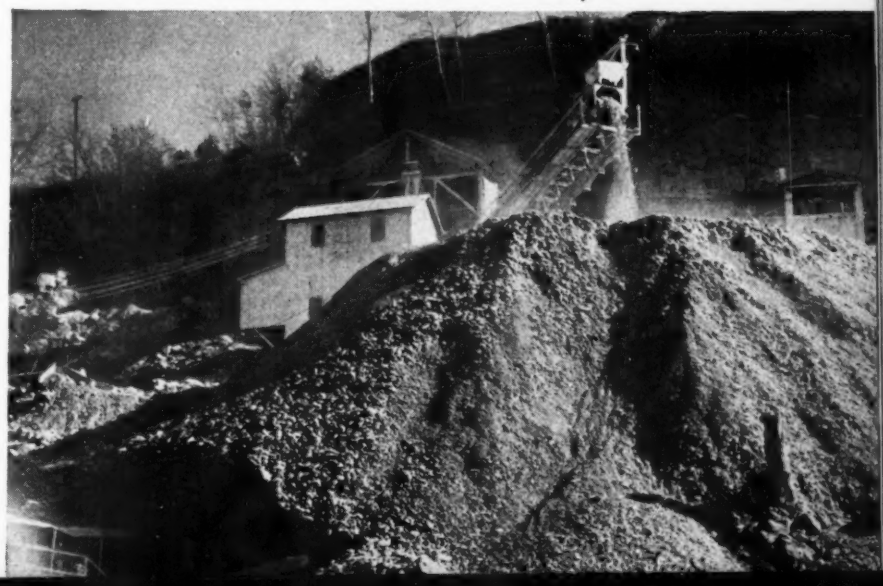
(Continued on page 116)



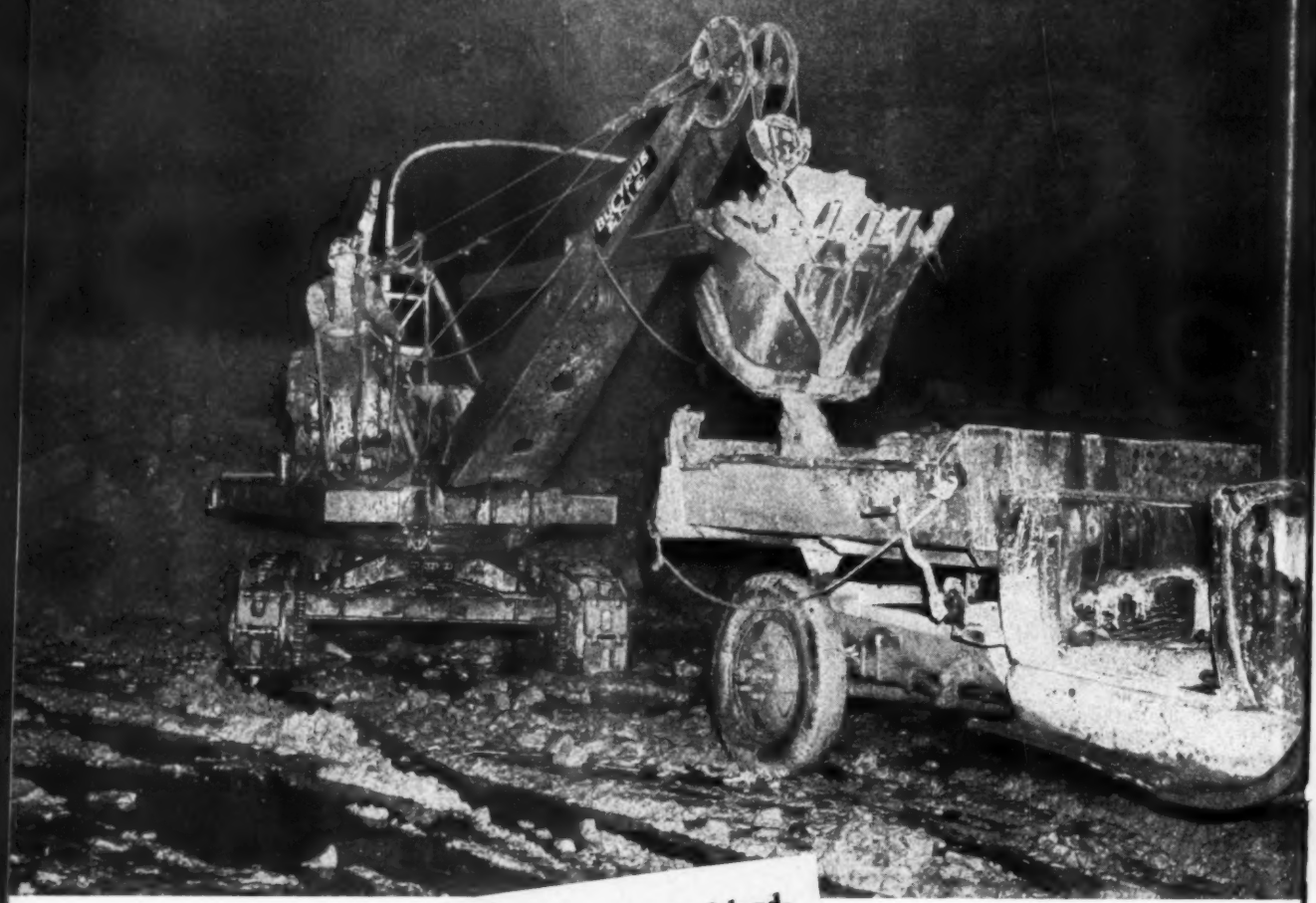
• (Above) Bucyrus-Erie Dozer-Shovel, mounted on International TD-9 tractor, usually operates in the mine, loading out stone too close to the face for shovel loading. Here the Dozer-Shovel loads dirt from spoil pile to truck for disposal. (Below, Right) At the primary crusher, trailers are side-dumped by an air-cylinder hoist. Crusher is an Allis-Chalmers No. 15 type N gyratory.



• (Above, Left) New pulverizing unit will be housed in this steel-beam structure shown during the erecting process. (Below) Surge storage of about 12 to 13 hundred tons is maintained, with stone withdrawn as needed in a feeder to the tunnel below.



Re-open Crawhall Mine



Meloy-Baker Mining Co. produces 175 tons of lead-zinc ore daily with 3/8-cu. yd. tunnel shovel and two two-ton trucks operating in underground workings of Crawhall Mine recently opened after being abandoned for 35 years.

● Meloy-Baker Mining Co. uses this Bucyrus-Erie 3/8-cu. yd. electric tunnel shovel with an 11-ft. boom and 10-ft. 6-in. dipper handle to load ore previously blasted to two-ton Ford back dump trucks.

USING AN ELECTRICALLY powered tunnel shovel for digging and trucks for underground haulage, Meloy-Baker Mining Co. of Benton, Wisconsin is successfully operating the Crawhall Mine, a large underground zinc and lead workings formerly worked by the Hunt Engineering Co. of Chicago and then abandoned about 35 years ago.

The Crawhall Mine was flooded with water to a depth of from 20 to 30 feet and so when Meloy-Baker decided to reopen it last April the first job that confronted them was to pump it out. A 14-inch drill hole was sunk from the ground surface on top a small hill near the shaft opening to the drift 235 feet below. An eight-inch 75 h. p. Layne-Northwest pump, which averaged 1500 gallons a minute, was used and the pumped out water was allowed to run over the surface ground to a creek running through the property. The drift of the old workings is from 70 to 100 feet wide, 35 feet high, and runs about 700 feet from the shaft opening westward to the one heading now being worked. Another drift, running eastward from the shaft opening, is shut off and is not now being worked.

By August 15 the mine was pumped dry, the shaft renovated and equipment installed ready for mining operations. All underground equipment, including the power shovel and two hauling

trucks, was lowered into the mine by a cable hoist through the inclined shaft which is 380 feet long, eight feet wide and six to ten feet high, with a 34 per cent slope to a depth of 215 feet. The electric motor and boom were taken off the shovel, a Bucyrus-Erie 10-B, 3/8 cu. yd. tunnel shovel, before it was lowered through the shaft by the cable hoist. It took from five and one-half to six hours to lower the shovel and then the motor and boom were again installed underground.

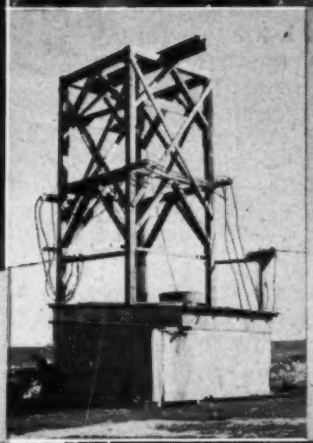
The trucks were lowered by the same method. Both hauling trucks are Fords with two-ton rear dump bodies, one with a hand lift dump and the other with a hydraulically operated dump mechanism. The Company has a third Ford truck on order which they hope to have in operation in the near future.

Meloy-Baker Mining Co. started mining operations on August 15 by first taking five feet off the floor of the drift going westward to the head. After 700 feet of this operation work was started on the head. Drilling and blasting operations are carried on ahead of the shovel loading. An Ingersoll-Rand 380 cu. ft. compressor located in a building above ground, just east of the shaft opening, furnishes power for drilling which is carried on daily by two men. Three-inch pipe is used to carry the air to the foot of the inclined shaft, two-inch pipe carries it the 700 feet from the shaft to the head, and from there 3/4-inch hose connects with the two Thor jackhammers being used.

Half of the heading, about 35 feet wide, is drilled and blasted and then while the shovel loads out this material the other half is drilled and blasted. Thus drilling and blasting and loading operations are carried on alternately at half the heading width. Four holes are drilled across the top and four across the bottom of each half of the heading. Holes are 14 feet deep starting out at about 2 1/2-inch diameter and decreasing to 1 1/4-inch in diameter. Eight-inch long 1 1/8-inch diameter sticks of Hercules or American explosive are placed in the drill holes and Hercules No. 6 blasting

● **Above: Driller uses knees to hold Thor jackhammer into head. Eight holes are drilled across half the heading, about 35' wide each day. Below, left: D. V. Meloy, one of the three owners is shift boss. Below, right : Dipper digs into material blasted the previous night. About 350,000 lbs. are brought down with nightly shooting and loaded daily.**

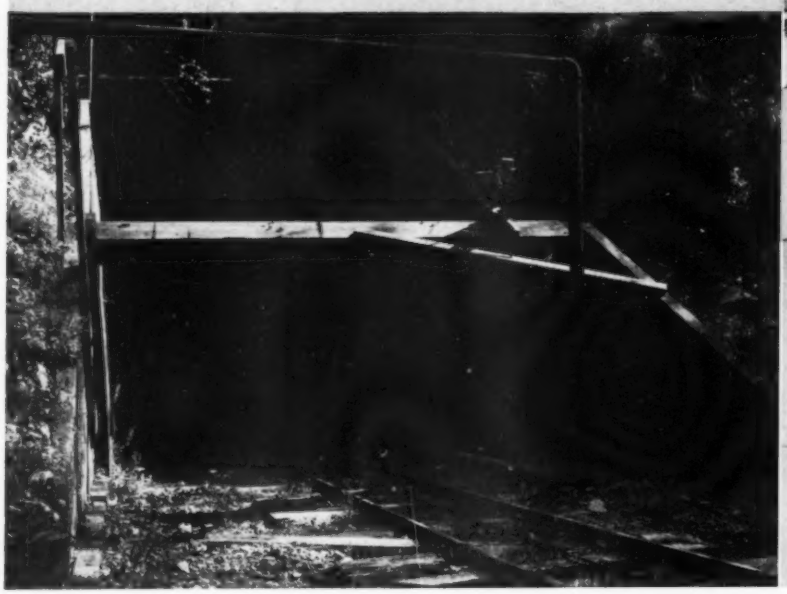
● **Loaded truck is dumped through hopper into hoist car which carries mined material to an elevated grizzly and hopper above ground.**



● Above: Electric pump brings seepage water from present level of drift being worked and discharges it (right, top) to small trench that carries water to area near shaft from where it is pumped out of mine.

● Transformer on mine property that reduces electric power brought to it at 33,000 volts to 250 volts for mine use.

● Above: Waste material hand picked from grizzly in elevated hopper to rear. Below: Ground opening of 380 foot long shaft which has a 34 per cent grade. Hoist car is lowered and raised by cable seen between tracks.



● Above: Loaded hoist car brings ore to elevated hopper where it is dumped on 2½-inch grizzly. Below: Raised boards on sides of rails enable hoist car to be dumped mechanically by hoist cable.

caps and Ensign-Bickford Clover Brand regular finish blasting fuse is used. Eight holes and about 20 boulders that are too big for the shovel to handle are blasted each night. Secondary blasting of boulders is done by drilling holes five or six inches deep into them and placing two or three inches of explosive cut from the eight-inch sticks into each boulder. Seven feet of fuse are used on the drill holes and four feet of fuse on the boulders. There are about 350,000 pounds of ore brought down per shot.

The electric tunnel shovel is able to load to the two trucks each day all ore blasted the previous night, with the exception of large boulders requiring secondary blasting the following night. About three full dippers load a truck. The truck then carries the material to a hopper at the bottom of the shaft from where it is dumped into a two-ton mine hoist car that runs on steel rails and is operated by cables from a hopper on a derrick about 35 feet high from the ground opening of the shaft. There is a 2½-inch grizzly in the 75-ton hopper and four men working in this hopper hand pick and sort oversize and waste ma-

(Continued on page 117)

Richard A. Dittmar

Richard A. Dittmar, Chief Engineer, Universal Atlas Cement Company, a United States Steel Corporation Subsidiary, died suddenly at his home in Brooklyn, New York, on December 28. Funeral services were held in Brooklyn on December 30.

Mr. Dittmar was born in Troy, Ohio, attended school in New York City and was a graduate in mechanical engineering of Cornell University where he was elected to Tau Beta Pi, honorary engineering fraternity. He joined the Universal Atlas Company in 1913 at the company's Hannibal, Missouri plant and served successively as power superintendent, power and maintenance superintendent and assistant plant manager.

In 1924 he became manager of the company's Hudson, N. Y., plant where his service was marked not only by management of the plant operations and by engineering accomplishments in connection with the reconstruction of that plant, but notably also with the personnel and safety programs there. When he was appointed chief engineer he moved to New York and assumed charge of the company's modernizing program, including completion of the engineering work for the new plant at Northampton, Pa., and the rehabilitation of the plant which the company acquired at Osborn, Ohio.

Mr. Dittmar was a member of the Cornell Club of New York and a former chairman of the Cement and Quarry section of the National Safety Council. While at Hudson he was a director of the First National Bank, president of the Hudson Community Chest, president of the Hudson Charity Commission, chairman of the Committee for Economic Development for Columbia and Greene Counties, N. Y., chairman of the Federal Re-employment Bureau, chairman of the WPB Salvage Division of Columbia County, chairman of Columbia County Health Unit, president of the Boy Scouts and a board member of the Methodist Church.

Mr. Dittmar is survived by his widow, Helen Lyford Dittmar, formerly of Falls City, Nebraska; his sons Richard A., Jr. of Poughkeepsie, N. Y., who served with the 15th Air Force in Italy, and Robert W. of Oswego, N. Y., who was a lieutenant with the Marines in China, and his sisters, Mrs. H. G. Barber of Roselle, N. J., and Mrs. C. H. McDowell of Los Angeles.

PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

STATE HIGHWAY MILEAGE - 1945

SUMMARY OF MILEAGE BUILT DURING YEAR BY STATE HIGHWAY DEPARTMENTS

P-4667

COMPILED FOR CALENDAR YEAR FROM REPORTS OF STATE AUTHORITIES

TABLE SHB-1, 1945
ISSUED OCTOBER 1946

STATE	MILEAGE GRADED AND DRAINED								MILEAGE SURFACED										STATE
	ON RURAL ROADS UNDER STATE CONTROL				ON URBAN EXTENSIONS OF STATE HIGHWAY SYSTEM UNDER STATE CONTROL	TOTAL MILEAGE GRADED ON ROADS AND STREETS UNDER STATE CONTROL	OTHER MILEAGE GRADED BY STATE HIGHWAY DEPARTMENTS 1/	TOTAL MILEAGE GRADED AND DRAINED	ON RURAL ROADS UNDER STATE CONTROL				ON URBAN EXTENSIONS OF STATE HIGHWAY SYSTEM			TOTAL MILEAGE SURFACED ON ROADS AND STREETS UNDER STATE CONTROL	OTHER MILEAGE SURFACED BY STATE HIGHWAY DEPARTMENTS 1/	TOTAL MILEAGE SURFACED	
	PRIMARY STATE HIGHWAY SYSTEM	SECONDARY STATE HIGHWAY SYSTEM	COUNTY ROADS UNDER STATE CONTROL	TOTAL					PRIMARY STATE HIGHWAY SYSTEM	SECONDARY STATE HIGHWAY SYSTEM	COUNTY ROADS UNDER STATE CONTROL	TOTAL	UNDER STATE CONTROL	ON CONNECTING STREETS NOT UNDER STATE CONTROL	TOTAL				
ALABAMA	-	-	-	-	-	-	-	-	621	-	-	621	37	-	37	658	15	673	ALABAMA
ARIZONA	18	-	-	18	-	18	9	27	60	-	-	60	-	-	-	60	-	60	ARIZONA
ARKANSAS	-	-	-	-	-	-	-	-	167	-	-	167	1	-	1	168	16	184	ARKANSAS
CALIFORNIA	-	-	-	-	-	-	7	7	155	181	-	336	22	-	22	358	38	396	CALIFORNIA
COLORADO	-	-	-	-	-	-	-	-	9	16	-	25	3	-	3	28	-	28	COLORADO
CONNECTICUT	-	-	-	-	-	-	1	1	27	-	-	27	3	-	3	30	24	54	CONNECTICUT
DELAWARE	-	-	2	2	-	2	-	2	26	-	25	51	1	-	1	52	-	52	DELAWARE
FLORIDA	4	-	-	4	-	4	-	4	299	-	-	299	75	-	75	374	-	374	FLORIDA
GEORGIA	9	-	-	9	-	9	7	16	769	-	-	769	85	-	85	854	60	914	GEORGIA
IDAHO	-	-	-	-	-	-	-	-	74	-	-	74	1	-	1	75	5	80	IDAHO
ILLINOIS	-	-	-	-	-	-	-	-	230	-	-	230	31	-	31	261	74	335	ILLINOIS
INDIANA	-	-	-	-	-	-	-	-	668	-	-	668	33	-	33	701	5	706	INDIANA
IOWA	-	-	-	-	-	-	-	-	253	-	-	253	27	-	27	280	-	280	IOWA
KANSAS	-	-	-	-	-	-	-	-	328	-	-	328	4	-	4	332	14	346	KANSAS
KENTUCKY	-	-	-	-	-	-	-	-	1,198	-	-	1,198	72	-	72	1,270	-	1,270	KENTUCKY
LOUISIANA	-	-	-	-	-	-	-	-	20	2/ 29	-	49	-	-	-	49	-	49	LOUISIANA
MAINE	-	-	-	-	-	-	-	-	7	2/ 43	-	50	2	-	2	52	-	52	MAINE
MARYLAND	-	-	-	-	-	-	-	-	96	-	-	96	1	-	1	97	-	97	MARYLAND
MASSACHUSETTS	-	-	-	-	-	-	-	-	2	-	-	2	1	-	1	3	2	5	MASSACHUSETTS
MICHIGAN	-	-	-	-	-	-	-	-	820	-	-	820	29	-	29	849	4	853	MICHIGAN
MINNESOTA	-	-	-	-	-	-	-	-	387	-	-	387	44	-	44	431	-	431	MINNESOTA
MISSISSIPPI	18	15	-	33	3	36	-	36	11	-	-	11	3	-	3	14	-	14	MISSISSIPPI
MISSOURI	-	23	-	23	-	23	-	23	84	21	-	105	11	-	11	116	-	115	MISSOURI
MONTANA	-	-	-	-	-	-	-	-	44	5	-	49	1	-	1	50	-	50	MONTANA
NEBRASKA	-	-	-	-	-	-	-	-	230	-	-	230	6	-	6	236	-	236	NEBRASKA
NEVADA	-	-	-	-	-	-	2	2	23	69	-	92	1	-	1	33	14	107	NEVADA
NEW HAMPSHIRE	-	-	-	-	-	-	-	-	4	6	-	10	-	-	-	10	-	10	NEW HAMPSHIRE
NEW JERSEY	-	-	-	-	-	-	-	-	14	-	-	14	5	-	5	19	5	24	NEW JERSEY
NEW MEXICO	-	-	-	-	-	-	-	-	174	-	-	174	4	-	4	178	-	178	NEW MEXICO
NEW-YORK	-	-	-	-	-	-	3	3	296	-	-	296	-	-	-	296	11	307	NEW YORK
NORTH CAROLINA	-	-	97	97	-	97	-	97	129	-	353	482	30	-	30	512	-	512	NORTH CAROLINA
NORTH DAKOTA	-	-	-	-	-	-	-	-	85	-	-	85	2	-	2	87	5	92	NORTH DAKOTA
OHIO	-	-	-	-	-	-	-	-	1,871	-	-	1,871	158	-	158	2,029	-	2,029	OHIO
OKLAHOMA	12	-	-	12	-	12	-	12	542	-	-	542	12	-	12	554	32	586	OKLAHOMA
OREGON	-	-	-	-	-	-	4	4	30	36	-	66	2	-	2	68	11	79	OREGON
PENNSYLVANIA	1	1	-	2	-	2	-	2	159	249	-	408	59	-	59	467	-	467	PENNSYLVANIA
RHODE ISLAND	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	2	-	2	RHODE ISLAND
SOUTH CAROLINA	9	-	-	9	1	10	-	10	95	-	-	95	6	-	6	101	2	103	SOUTH CAROLINA
SOUTH DAKOTA	-	-	-	-	-	-	-	-	18	-	-	18	-	-	-	18	-	18	SOUTH DAKOTA
TENNESSEE	2	-	-	2	-	2	-	2	349	-	-	349	2	-	2	351	45	396	TENNESSEE
TEXAS	26	-	-	26	1	27	-	27	688	-	-	688	31	-	31	719	7	726	TEXAS
UTAH	-	-	-	-	-	-	-	-	64	-	-	64	8	-	8	72	-	72	UTAH
VERMONT 4/	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	VERMONT 4/
VIRGINIA	-	-	7	7	-	7	-	7	26	-	385	411	-	-	-	411	-	411	VIRGINIA
WASHINGTON	-	-	-	-	1	1	-	1	108	66	-	174	3	2	5	177	-	179	WASHINGTON
WEST VIRGINIA	-	-	-	-	-	-	-	-	95	-	178	273	13	-	13	286	-	286	WEST VIRGINIA
WISCONSIN	-	-	-	-	-	-	-	-	691	-	-	691	29	1	30	720	7	728	WISCONSIN
WYOMING	-	-	-	-	-	-	-	-	9	-	-	9	-	-	-	9	22	31	WYOMING
DISTRICT OF COLUMBIA 4/	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DISTRICT OF COLUMBIA 4/
TOTAL	99	39	106	244	6	250	33	283	12,055	721	941	13,717	860	3	863	14,577	418	14,998	TOTAL

1/ INCLUDES MILEAGE BUILT BY STATE HIGHWAY DEPARTMENTS ON COUNTY OR LOCAL ROADS NOT UNDER STATE

2/ MILEAGE BUILT ON STATE-AID SYSTEM.

Road Fund Diversion

Expanding road construction programs and proposals for increased gas taxes to meet needs for highway building funds will increase interest in anti-diversion laws in many state legislatures in 1947.

By BETHUNE JONES

FURTHER GAINS IN the campaign to curb the diversion of automotive tax receipts to non-highway purposes will be sought in many states during 1947, a survey of developments in state capitals reveals.

With plans under way for unprecedented expansion of highway construction, accompanied by proposals for increased gasoline and other automotive taxes, added significance attaches to efforts of highway interests to abolish the highway fund diversion practice, which in the past has resulted in the appropriation of more than $2,000,000,000 of automotive tax receipts to general governmental uses rather than highway construction and maintenance.

Recent election approval in Texas of a state constitutional amendment restricting the use of highway-user taxes brought to 19 the number of states which have amended their basic laws to curb the diversion practice. States which previously took such action are California, Colorado, Idaho, Iowa, Kansas, Maine, Michigan, Minnesota, Missouri, Nevada, New Hampshire, North Dakota, Kentucky, Pennsylvania, Oregon, South Dakota, Washington and West Virginia.

As contrasted with most such amendments, which are generally sought to prohibit any diversion of highway funds, the new Texas amendment is of limited effect in that it dedicates to highway purposes only three-fourths of the net receipts from taxes on motor fuels and lubricants, and motor vehicle fees. The balance is dedicated to the available school fund.

Adoption of the Texas amendment was regarded as a major victory for the anti-diversion forces, however, and as a step toward better roads in Texas. Along with the earlier action taken by the 18 other states to constitutionally restrict highway fund diversion, it will be widely cited where the issue is raised during 1947.

Massachusetts to Vote

A state constitutional amendment to prohibit highway fund diversion in Massachusetts was approved by the 1946 Massachusetts legislature and will go before the voters at a statewide election if similarly passed by the 1947 legislative session.

Legislatures of Indiana and Tennessee will have to decide whether to send to the electorate anti-diversion amendments given initial approval at 1945 legislative sessions in those states.

Ohio voters may get a chance to vote on an anti-diversion amendment in November, 1947, as a result of petitions which have been in circulation in that state. Sponsors of the campaign have expressed confidence they will obtain the required 300,000 signatures, although this number had not been obtained in time to get the issue on the 1946 election ballot.

It was recently announced that sufficient signatures had been obtained to bring before Oklahoma voters a proposal to restrict gasoline taxes and motor vehicle fees to highway construction and maintenance. The signatures were not obtained in time to clear legal details to put the issue on the 1946 ballot, however, with the result that it may go to the voters at a special election during 1947.

Expect Revival in Utah

An anti-diversion amendment proposal is expected to be revived during the 1947 legislative session in Utah, where there has been strong opposition to a proposed gasoline tax increase on the grounds that present automotive tax receipts have not been used entirely for roads.

Wisconsin now has statutory protection against highway fund diversion, but highway-user groups there have announced plans to attempt to have such provisions written into the state constitution.

Action towards an anti-diversion amendment also will be sought in Illinois, whose 1945 legislature adopted a resolution opposing highway fund diversion.

Constitutional prohibition against diversion also is expected to be sought in many other 1947 state legislative sessions, including those of Connecticut, Delaware, Georgia, New Jersey, New York and Rhode Island.

While the need of huge sums to support expanded postwar highway construction and maintenance plans provides a strong argument for the anti-diversion forces, the various obstacles which have delayed the start of postwar construction programs will play into the hands of those who would use automotive tax receipts for other purposes. While the letting of construction contracts has been impeded by labor, price, materials and other obstacles, gasoline and other automotive tax receipts have been accumulating at a rate far exceeding expectations in most states.

Expect Strong Pressure

Result of this situation will be strong pressure for diversion of highway funds to other uses until highway construction is speeded. Tennessee is one state in which such pressure has been predicted. Another indication of it came during the 1946 session of the Massachusetts legislature when one solon opposed the anti-deversion amendment proposal on the basis that $46,000,000 in Massachusetts

(Continued on page 117)

One Man Tank Corps

Not only digging the pits but placing the tanks as well, Panda Contracting's Dozer-Shovel made a one-machine job out of putting in underground tanks for a super service station. The same unit also showed its versatility by handling a variety of operations on a new housing project.

HANDLING ALL THE digging, placing, and backfilling operations with one machine and one operator, Panda Contracting of Affton in the St. Louis suburban area recently demonstrated something new in technique when they put in six 4000-gal. gasoline tanks for the Goodyear Speedway, super-service gasoline and accessory station located on Missouri highway 61 near the southwest limits of St. Louis.

A Bucyrus-Erie Dozer-Shovel mounted on an International TD-9 TracTracTor was used for the job, which involved digging three excavations for the tanks, placing two tanks in each hole, backfilling, first with 25 tons of sand and then with excavated material, and grading the surface. The total excavated yardage was 555 cu. yds.

Each excavation was dug 10 ft. deep, 16 ft. wide, and 18 ft. long at the start, then ramped back about 30 ft. to provide access for bringing in the tanks. Excavated material was dumped at the surface beside the hole. To bring in each tank, which measured 7 ft. high and 13 ft. 6 in. long, the Dozer-Shovel employed a chain sling, hooked at each end into the tank vent holes and slung over a hook on the upper edge of the bucket. By raising the bucket to full height, the tank was raised off the ground and carried ahead of the tractor down the ramp and into the excavation, where the tank was unhooked and rolled into position. Because there were two tanks for each excavation, this operation was done twice before backfilling was begun. Sand was then packed in around the tanks and dirt backfilled by the Dozer-Shovel, which also graded the surface and compacted it by traversing with the tractor tracks.

Each of these jobs involved the use of only the Dozer-Shovel and its operator, and was completed in a total of nine hours. The jobs were not handled consecutively, but all three were done within the space of about a month.

The versatility of the Dozer-Shovel is an old story at Panda Contracting, for just prior to the tank pit contract, the unit had been at work on new housing at Bedford Oaks subdivision located in Kirkwood, Missouri (St. Louis suburban area) where it dug 15

(Continued on page 117)

1. To provide access for carrying tanks in after a pit was dug, Panda's Dozer-Shovel excavated a 30-ft. ramp. 2. To fasten a tank for picking up, a chain sling was attached to the tank and looped around the hook on the Dozer-Shovel bucket. Raising the lift arms to full height lifted the tank off the ground. 3. Front view shows tank suspended from hook. In this manner, the Dozer-Shovel carried the tanks in—two to each pit. 4. With the tank lowered to the ground, the Dozer-Shovel rolled it into position. Sand was then packed around, and dirt backfilled.

and a place for rubber

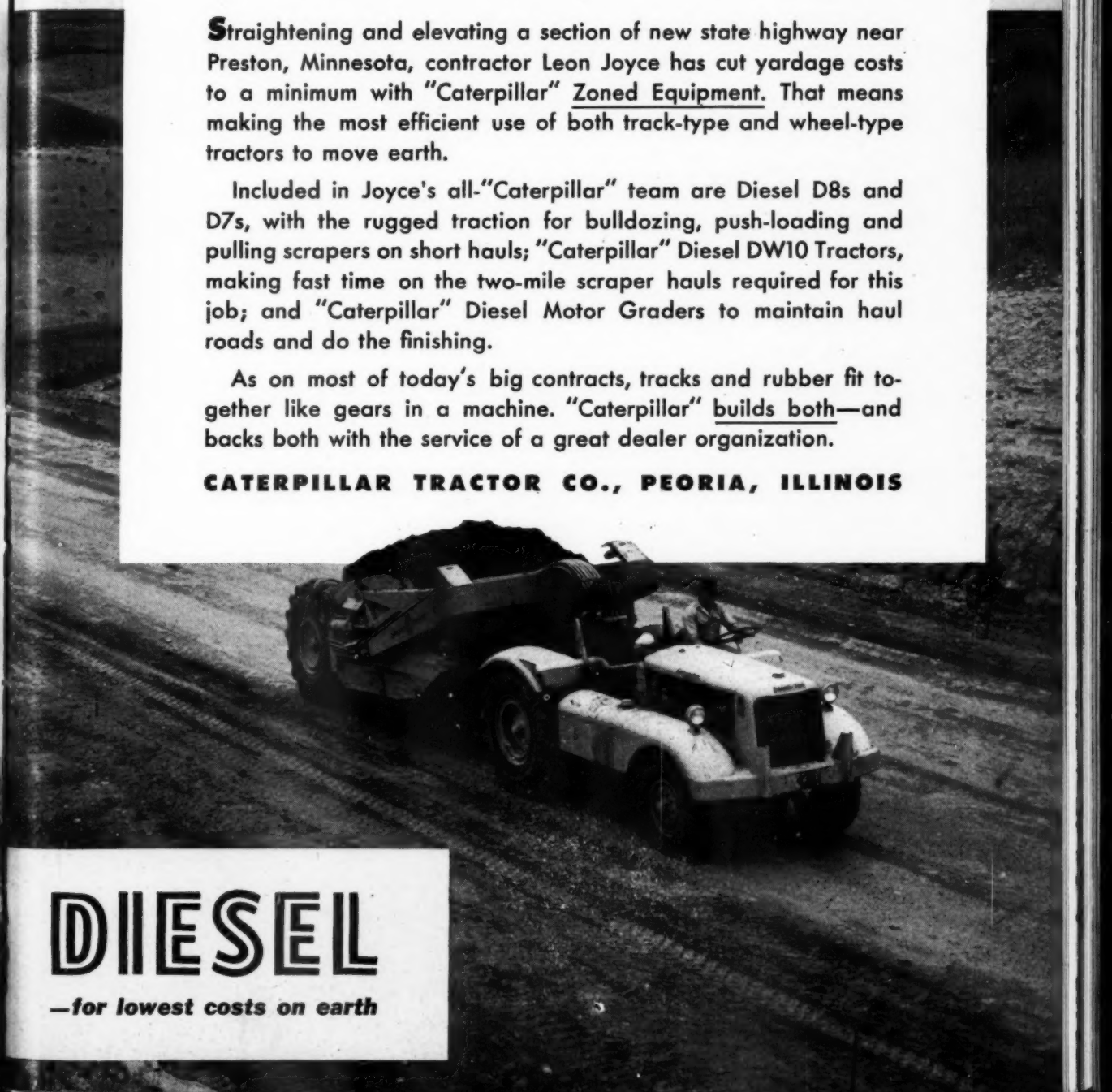
'Caterpillar' Diesels" —*Leon Joyce, Rochester, Minn.*

Straightening and elevating a section of new state highway near Preston, Minnesota, contractor Leon Joyce has cut yardage costs to a minimum with "Caterpillar" Zoned Equipment. That means making the most efficient use of both track-type and wheel-type tractors to move earth.

Included in Joyce's all-"Caterpillar" team are Diesel D8s and D7s, with the rugged traction for bulldozing, push-loading and pulling scrapers on short hauls; "Caterpillar" Diesel DW10 Tractors, making fast time on the two-mile scraper hauls required for this job; and "Caterpillar" Diesel Motor Graders to maintain haul roads and do the finishing.

As on most of today's big contracts, tracks and rubber fit together like gears in a machine. "Caterpillar" builds both—and backs both with the service of a great dealer organization.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS



DIESEL

—for lowest costs on earth

Shots from the FIRING LINE

Complete Plans for 44th Annual ARBA Meeting

Plans have been completed for the 44th Annual Convention of the American Road Builders' Association to be held in Chicago February 17-20. Convention headquarters will be at the Palmer House.

Norman Almquist, administrative assistant of the ARBA, predicts that in addition to being one of the best-attended conventions the association has held, it will have one of the finest programs ever offered to road builders of America. Outstanding leaders in all activities pertaining to highway and airport construction will present papers or lead discussions. Reports from more than 20 ARBA technical committees will be a highlight of the meeting.

Appoint M. D. Shaffer Ohio State Highway Director

Ohio's new state highway director is Murray D. Shaffer, 43, of Mansfield, O., former chief engineer of the bureau of location and design for the State Highway Department. He was appointed by Governor-elect Thomas J. Herbert, with whom he took office Jan. 13.

Besides being familiar with the administration of the State Highway Department in which he held high positions from 1940 to 1943, Shaffer also is familiar with the state and federal highway problem in the urban areas. His former chief, Hal V. Sours, put in his hand the general planning of the national system of interstate highways. Shaffer then set up the first state highway planning office in Cleveland, independent of the district state highway engineer, under which much of the work of planning Cleveland's $240,000,000 freeway system was handled.

Shaffer is a graduate in civil engineering at Ohio University, Athens, and started his career as a deputy county engineer in Ashland County, in charge of design and construction of county highways.

Following several years as a private consulting engineer, specializing in municipal and sanitary engineering, he served as safety and service director of Mansfield.

In 1939 he was appointed devision engineer of Division No. 3 of the State Highway Department, with headquarters at Ashland. A year later he was promoted to location and design chief engineer. Since 1945 he has been engineer-director of Macadam Pavements, Inc., a technical and research organization.

• This hemlock log being loaded to the railroad car by the Bucyrus-Erie 54-B log loader is 40 ft. long, 34 in. in diameter and weighs about 30,000 pounds. This is the type of log heeling boom used most frequently by loggers in western Oregon and western Washington where the timber is usually larger and heavier than in other sections of the northern Washington timber belt. These logs were unloaded from motor trucks which brought them from the woods and are being loaded to railroad cars for delivery to the pulp mill in Everett, Wash., about 80 miles away.

U. S. Mineral Production Value Reaches All-time Peak

The total value of minerals and mineral products produced in the United States and Alaska in 1946 reached an all-time peak, exceeding the former record of 1944 by six per cent, Secretary of the Interior J. A. Krug announced. On the basis of preliminary estimates prepared by the Bureau of Mines, their value in 1946 was $8,900,000,000.

Establishment of the new record, which surpassed the 1945 total valua-

• Artist's conception of Angostura Dam, first South Dakota unit of the Missouri Basin program of the Bureau of Reclamation. On the Cheyenne River, about nine miles south of Hot Springs, S. D., Angostura Dam will be a concrete gravity type extending from the left abutment across the river channel and an earth embankment extending along the right abutment, with a total crest length of approximately 1,900 feet and a maximum height above the river bed of about 150 feet. The dam will store water for irrigation, silt control and recreational purposes.

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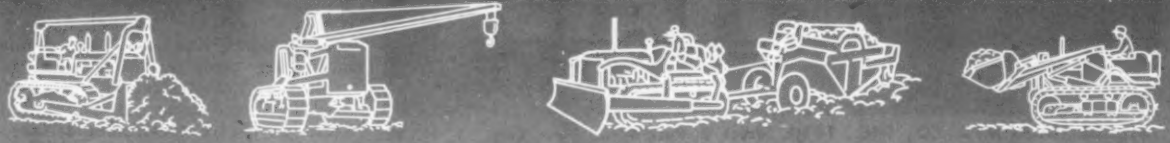

SHOTS from the Firing Line

(Continued from page 82)

tion of $8,143,000,000 by nine per cent, resulted largely from the general advance in the prices of mineral commodities in 1946, according to the estimates submitted to Dr. R. R. Sayers, Bureau Director, by the Economics and Statistics Branch. Increased demand was also an important contributing factor, requirements expanding as the tempo of industrial reconversion to a peacetime economy accelerated during the year. New production records were recorded for petroleum and natural gas, among the fuels; and for potash and phosphate rock, of the fertilizers. Building materials were in strong demand, and outputs of many were substantially greater than in the preceding year, reflecting the growing activity in the construction industry. Increases in the production of cement, clay and clay products, sand and gravel, slate and stone ranged from 15 to more than 80 per cent.

Of the three major classes of mineral products—metals, fuels, and other nonmetals—only metals showed an over-all decline in value of output in 1946, this decline amounting to four per cent. Value of the fuels increased nine per cent, and that for nonmetals, other than fuels, advanced 36 per cent. Gold was the only one of the principal metals to show a gain in 1946.

Details on mineral production in 1946 follow:

• **Reclaimed lime is dozed by LeTourneau bulldozer over a ramp into railroad car below at Universal Exploration Company's Jefferson City, Tenn. zinc mine. The lime, a by-product of zinc mining operations, is reclaimed for agricultural use.**

METALLIC PRODUCTS

Total value of metallic products in 1946 was $1,900,000,000 compared with $1,975,000,000 in 1945—a decline of four per cent.

Outputs of the various metals in 1946, with the exception of gold, were generally at levels ten to 25 per cent below those that prevailed in 1945. The decreases were largely attributable to strikes, chronic manpower shortages resulting from the delayed return to the mines of skilled workers demobilized from the armed forces, difficulties in obtaining new equipment and supplies, and the necessity for assigning a greater than normal part of the labor force at the mines to development work. Ore reserves, depleted during the war years, had to be restored to the tonnages required for economic operations.

Iron and Steel—The steel and allied industries experienced strikes resulting in substantial production declines for all ferrous materials during 1946. Production of steel ingots and castings dropped 18 per cent, to an estimated 65 million short tons—the lowest since 1939. Output of alloy steels in particular declined twice as sharply as other grades. Pig iron and iron ore production decreased approximately 15 and 18 per cent, respectively.

Ferry-alloy Metals — Production of molybdenum in 1946 was at 50 per cent the 1945 rate; vanadium output was 65 per cent less, and chromite declined 75 per cent. High-grade manganese ore (35 per cent or more manganese) and low-grade ore (5-10 per cent) showed losses of about 16 and 43 per cent, respectively, but medium-grade ore (10-35 per cent) made a gain of about 62 per cent in output. Production of tungsten concentrates declined for the third consecutive year.

Copper, Lead, and Zinc—Widespread strikes at nonferrous metal mines, smelters, and refineries throughout the first half of 1946 caused setbacks in the output of copper, lead, and zinc that could not be recouped, as of the year's end, despite the continued payment of premium prices to high-cost producers and a strong consumer demand for the metals. Smelter output of copper from domestic ores fell off fully 25 per cent in 1946 compared with 1945. The effect was less drastic on refined lead and slab zinc, the production of which from domestic ores decreased about 12 and 8 per cent, respectively.

Light Metals—Delays in disposing of Government plant sand shortages of soda ash prevented aluminum producers from meeting a demand that exceeded expectations. Output of primary aluminum in 1946 was about 16 per cent less than in 1945, but by the end of the year all Government alumina and aluminum reduction plants that could be operated economically under present conditions had been sold or leased to private companies, and the industry was producing at a rate 10 per cent greater than in 1945. There was no output of primary magnesium metal in the first five months of 1946, accumulated stocks having been more than ample to supply consumers. Production of the metal from seawater was resumed at Freeport, Texas, in June and by the end of the year amounted to one-sixth of the 1945 total. Aluminum and magnesium were the only "large-tonnage" metals whose prices in 1946 were below prewar levels.

Gold and Silver — Gold was unique among the principal metals, in that it achieved a net production gain in 1946 over 1945, the mine output increasing about 54 per cent. Greater strides to-

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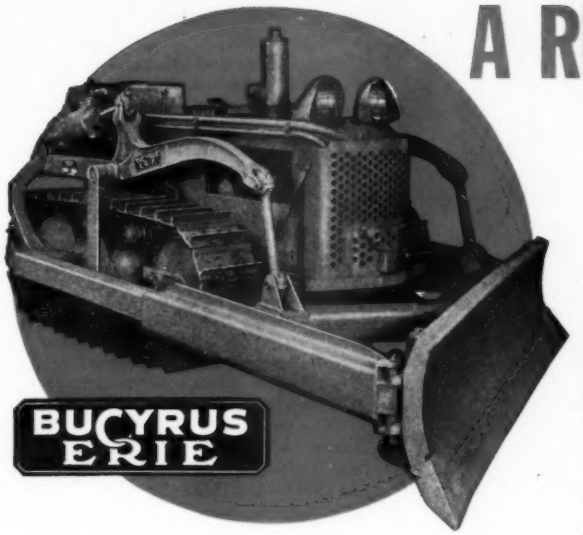

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The Bullgrader is mounted to the TracTracTor in such a way that its balance point is not affected. This enables the tractor to do the work for which it is designed, lets it travel both forward and backward without tipping. It means that you get the full tractive effort of the track belt. Track roller loads are distributed evenly. Excessive wear and strain on front track idlers and rollers is eliminated.

2 LOADS ARE APPLIED AT THE PLACES DESIGNED TO TAKE THEM

The main frame of the Bullgrader is attached to the tractor at the point of rotation of the tractor tracks, so that digging thrusts are carried directly to pivots on the rear support brackets. All superstructures are mounted on the track frame, relieving the tractor main frame, engine, transmission case, final drive housing, etc., of damaging stress and shock loads.

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• Carl Goodwin & Sons, Allegan, Mich., uses Bucyrus-Erie bulldozer to clear overgrowth from five miles of 200 ft. right of way for Michigan State Highway 40.

ward prewar levels were hindered by inadequate movements of labor and supplies to reopened mines and by the handicap of marketing a fixed-cost product with mining costs steadily increasing. Silver production declined about 27 per cent, largely as a result of curtailed base-metal output, despite a 25-per cent increase in the price of the metal in the last five months of the year.

Other Metals—The interruptions in nonferrous smelter operations in 1946 decreased the recovery of byproduct cadmium, bismuth, and arsenic about 25, 35, and 50 per cent, respectively, compared with 1945. Mercury output was down 25 per cent and antimony more than 50 per cent. Production of ilmenite lagged 10 per cent but remained at a sufficiently high level to contribute significantly to a peak consumption in titanium pigments. Rutile output held close to the preceding year's level and thereby equalled consumption for the first time since demand for it has been of consequential quantity. Zircon production in 1946 tripled the 1945 output and established a new high.

MINERAL FUELS

Total value of the mineral fuels in 1946 was $5,700,000,000 compared with $5,212,000,000 in 1945—an increase of nine per cent.

Petroleum and Natural Gas—New production records were established in all branches of the petroleum and natural gas industries in 1946.

Bituminous Coal—Production of bituminous coal and lignite in 1946 was estimated at 528,000,000 net tons, a decline of 8.6 per cent from the 577,617,327 tons produced in 1945. This decline was not due to lower demand but to strikes. The soft coal industry was confronted with two major strikes in 1946 and with intermittent wild-cat strikes throughout the entire year. The estimated loss of production during the two major strikes alone amounted to 107,000,000 net tons.

The average value per net ton at the mine for soft coal in 1946 was $3.40—an increase of 11 per cent over $3.06 in 1945—the highest value on record since 1920.

Pennsylvania Anthracite — Production of Pennsylvania anthracite in 1946 is estimated at 60,300,000 net tons, an increase of about 10 per cent over the output of 54,934,000 tons in 1945. The increase is attributed principally to additional manpower in and about the mines, fewer and shorter labor stoppages, and the ability of the producers to obtain mining machinery and equipment more readily than during the war years. The estimated value at the mine of the 1946 production was $430,000,000.

Coke—Production of byproduct and beehive coke in 1946 was estimated at 57,800,000 net tons, a decline of about 14 per cent from the 1945 output of 67,300,000 tons. The market decline was caused principally by interrruptions in coke-oven operations resulting from strikes in the steel and bituminous coal industries.

OTHER NONMETALLIC MINERALS

Total value of nonmetallic minerals, other than fuels, in 1946 was $1,300,000,000 compared with $956,000,000 in 1945—an increase of 36 per cent. The transition to a peacetime economy stimulated many war-deferred activities involving utilization of the nonmetallic, so much that a number of them established new records of sales value in 1946. Included in this group were barite, boron minerals, feldspar, phosphate rock, potash, sodium carbonate, and vermiculite. Building materials and fertilizers, particularly, exhibited strong upward trends.

Building Materials—Public and private building and highway construction that had suffered a severe recession during the depression of the early 1930's were recovering when the war clouds broke, and, during the war years, all building except that devoted to military use approached stagnation. Thus, an enormous need existed after the war for all types of building construction. Considerable progress toward relieving this need was made in 1946, and the expanding construction program has called for increasing quantities of building materials. Cement shipments increased

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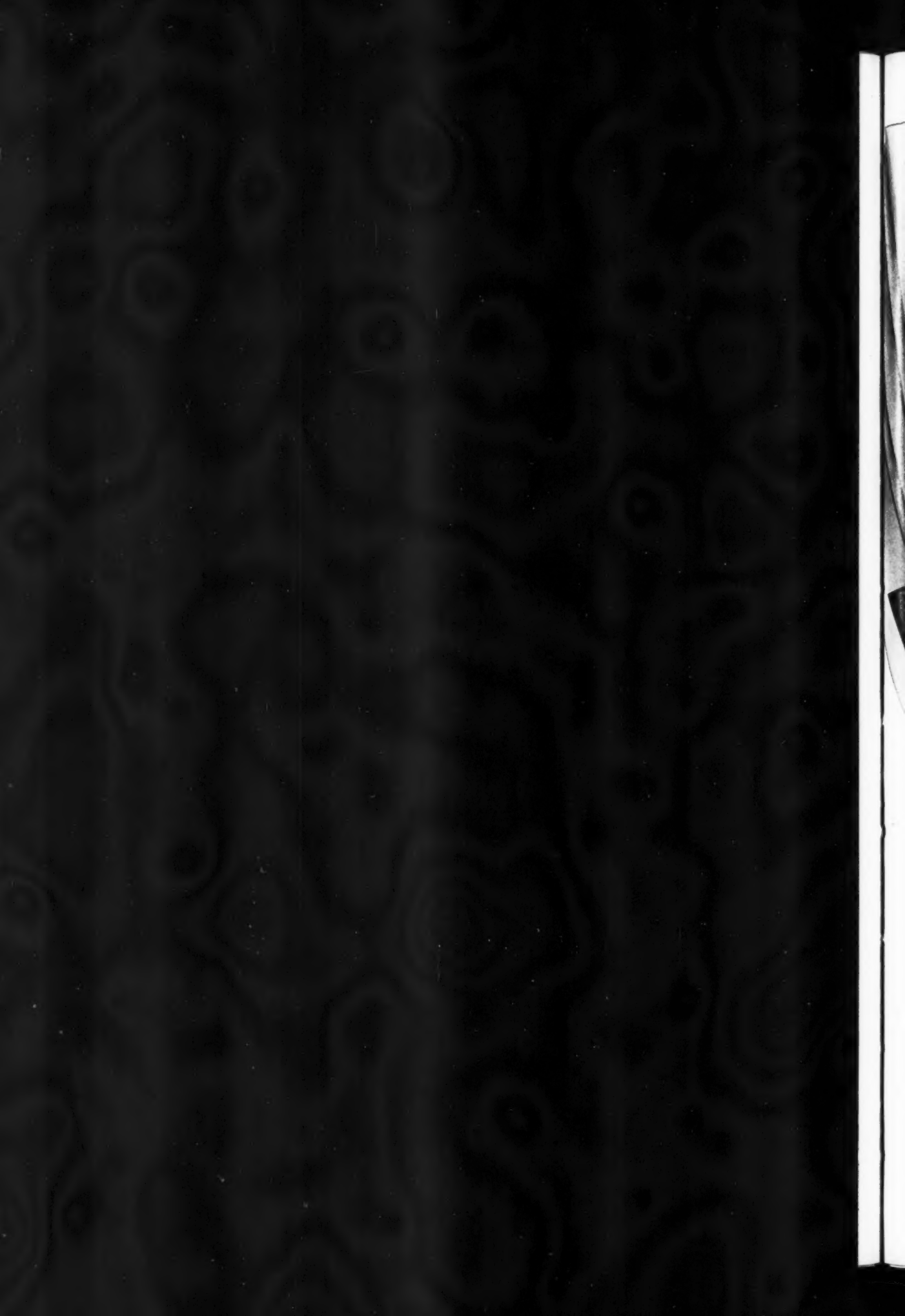

The Rock-Drilling Record

LE ROI COMPANY

FEBRUARY, 1947

VOL. I.

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Contractors can look forward to lower drilling costs with the union of Le Roi compressor efficiencies and Cleveland drilling performance.

AIRMASTER Compressors range in size from 60 to 500 cfm. There is a choice of gasoline or diesel power in all models, except the 60 — this is

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Increased demand for stone met by wise use of modern rock-drilling equipment. Unusual flexibility of Cleveland wagon drill responsible for establishing new daily footage records. Ample power

Production of Critically Needed Lead Aided by Cleveland Rock Drills

Rotation strength, easy-holding and dependability of these tools key factors in increasing tonnage per miner. The men say that they like to use Cleveland Drills. Reports show that miners drill more feet of hole and are less tired at the end of the shift.

Utilities Speed Repair Work with Air Tools

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A leader in portable air power and a leader in rock-drilling equipment join to give you new standards of rock-drill service and performance

Service

We are emphasizing prompt, efficient service because it is a basic Le Roi policy. It is so important to us that no one holds a Le Roi franchise who doesn't conform to our rigid requirements. Nation-wide, Le Roi service is handled by well-trained, experienced, and competent men. All service outlets are conveniently located to assure you of speedy attention.

Performance

Users tell us that the AIRMASTER line of compressors is portable air power at its best. These fine compressors are now teamed with the well-known line of popular, fast-drilling Cleveland rock drills. For example, the 55-lb. H-111 hand-held drill, thanks to a happy combination of high drilling speed, dependability, and easy holding, is hard to beat. The Cleveland wagon drill establishes new drilling records almost everywhere that it is put to work — unusual flexibility and the power to drill deep holes are mainly responsible. Mines, with the job of producing metals critically needed in our economy, call on Cleveland drills to help step up their tonnages.

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Le Roi and Cleveland Rock Drill are now one — this includes all Cleveland's basic patents and all patents pending. Cleveland and Le Roi designers and metallurgists are all members of the same family. To rock drill users, this combination of talent and experience means, in addition to new standards of service, future developments that will further serve to reduce drilling costs.

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from less than 108,000,000 barrels in 1945 to 175,000,000 in 1946, a gain of more than 60 per cent. Sand and gravel, used extensively as concrete aggregate and in other ways connected with construction, also made broad gains, attaining an output of about 290 million tons compared with 196 million in 1945. Stone used as aggregate made large gains, but agricultural and metallurgical demands declined. Dimension stone output increased moderately. The overall gain in sales of stone was about 25 per cent; total output, aside from that used in cement and lime manufacture, was about 190,000,000 tons valued at $240,000,000.

A marked expansion in the home-building program resulted in a substantial gain in sales of slate although the industry was hampered by labor shortages, and by deterioration of plant and equipment during the war. Demands for brick, tile, and other clay products were so heavy that output was 2½ times as great as in 1945. Gypsum production, which had been well maintained during the war because gypsum board was used widely in many types of war construction, advanced 45 per cent in 1946 beyond the 1945 level, in consonance with progress in the housing program. Sales of building lime increased, but agricultural and metallurgical demands dropped moderately; total value of output, which was about 45 million dollars, was 1 per cent less than in 1945.

Fertilizers—The demand for food products for shipment to starving nations abroad, as well as to supply our growing domestic needs, was greater in 1946 than at any other time in the Nation's history. To attain maximum farm production, fertilizers were applied abundantly. Both phosphate rock and potash sales surpassed all previous records, the former reaching a value of more than 27 million, and the latter about 32 million dollars. Most of the synthetic nitrogen plants were closed with the collapse of military requirements, but those operating furnished ample supplies of nitrogen compounds for the heavy demands of agriculture.

Refractories—With a drop of approximately 18 per cent in steel output as a result of strikes, the demand for refractories, such as dead burned magnesite and dolomite, silica brick, and fire clay, was lower than in 1945. Magnesite output declined about five per cent to 320,000 tons.

• An International I-4 tractor with Hough rotary sweeper brushes off crushed-rock screenings on a new asphalt-surfaced section of Route 60 in mountainous Virginia, near Clifton Forge. The brush is 72 inches long and has a sweeping path of 60 inches.

Chemical Raw Materials — As an aftermath of war, the agricultural, household, chemical and, especially, the metallurgical demands for common salt (sodium chloride) showed a downward trend; the value of production of nearly $45,000,000 was about three per cent lower than in 1945. Fertilizer demands for sulfur were high, but some of the industrial demands declined; the sales value of about $61,000,000 was virtually the same as the all-time high of 1945. Pyrite sales also were about the same as in 1945. Chiefly as a result of the increasing demands for barite as a weighting material in oil-well drilling muds, the industry attained an all-time high output of about 700,000 tons valued at $5,600,000. The output of boron minerals stimulated by requirements of enamels for stoves and refrigerators attained a new high record of 375,000 tons.

The demand for bromine, which is used chiefly as ethylene dibromide—a constituent of anti-knock gasoline—was lower than in 1945 when military demands were still strong. As peace-time demands for lithium salts are only a fraction of those during war, their output declined further from the low level of 1945. Strontium minerals, which are used to some extent as mud-weighting agents in oil-well drilling, are less effective than barite, and output dropped to about one-half of that in 1945. There was little change in the market for calcium chloride, used chiefly in stabilizing rural road surfaces.

Other Minerals—Inability of the domestic mica industry to compete on a cost basis with that of India resulted in a further decline in domestic output in 1946 from the low level of 1945. The value of sales of sheet mica from United States mines was about half a million dollars in 1946. Sales of scrap mica

(Continued on page 94)

These two pictures show one stage of a noteworthy dredging and dirtmoving operation being carried out by C. A. Pitts, Ltd., outstanding Canadian contractor, in enlarging a 3½-mile tailrace at Ontario hydro plant. An ingenious arrangement of floating cranes for digging and dumping, and Sauerman Drag Scrapers for disposal and spreading of sticky mud, has enabled Contractor Pitts to make rapid progress on a difficult project at a cost well below the estimate.

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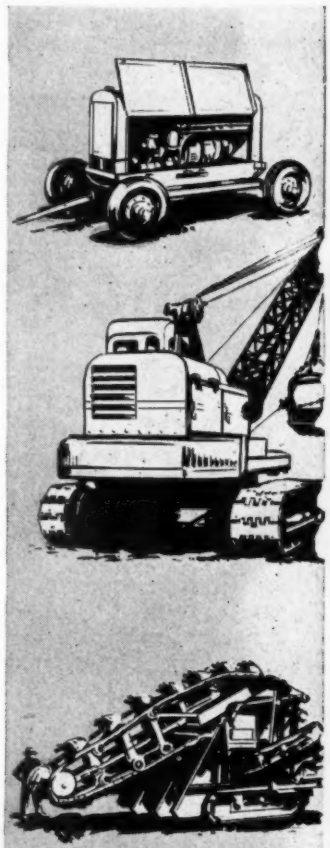

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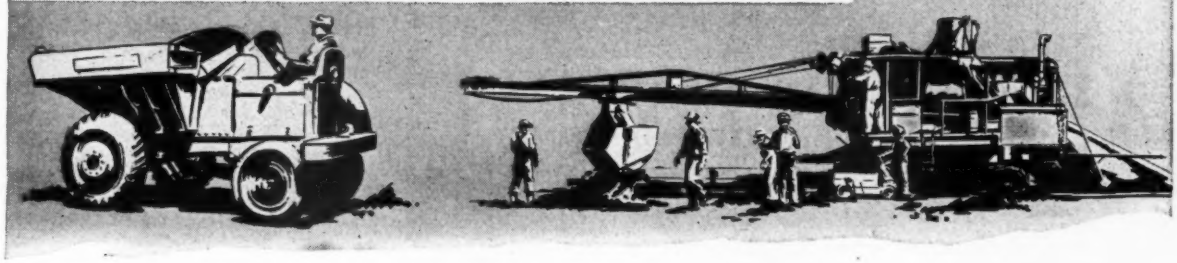


SHOTS from the Firing Line

(Continued from page 90)

declined slightly. As foreign graphite is available for crucible use, domestic sales were confined chiefly to the amorphous type. Demands were somewhat lower than in 1945.

Substantial gains in glass and enamel manufacture so increased the demand for feldspar that output was more than 400,000 tons in 1946, exceeding all previous records. Sales of talc, which is used principally in the paint, rubber, ceramics, and roofing industries, experienced little change. There was in 1946 an unusually heavy demand for asbestos, and domestic production, which is always small, made substantial gains.

Elect Butler Head of Pennsylvania Contractors

W. C. Morris Butler, Hazleton, head of one of the largest highway building firms in the Commonwealth, was elected president of the Associated Pennsylvania Constructors, a state organization with a membership comprised of highway, airport and heavy building contractors, at an Annual Convention held in the Bellevue-Stratford Hotel, Philadelphia.

Other officers elected to serve for the year of 1947 are:

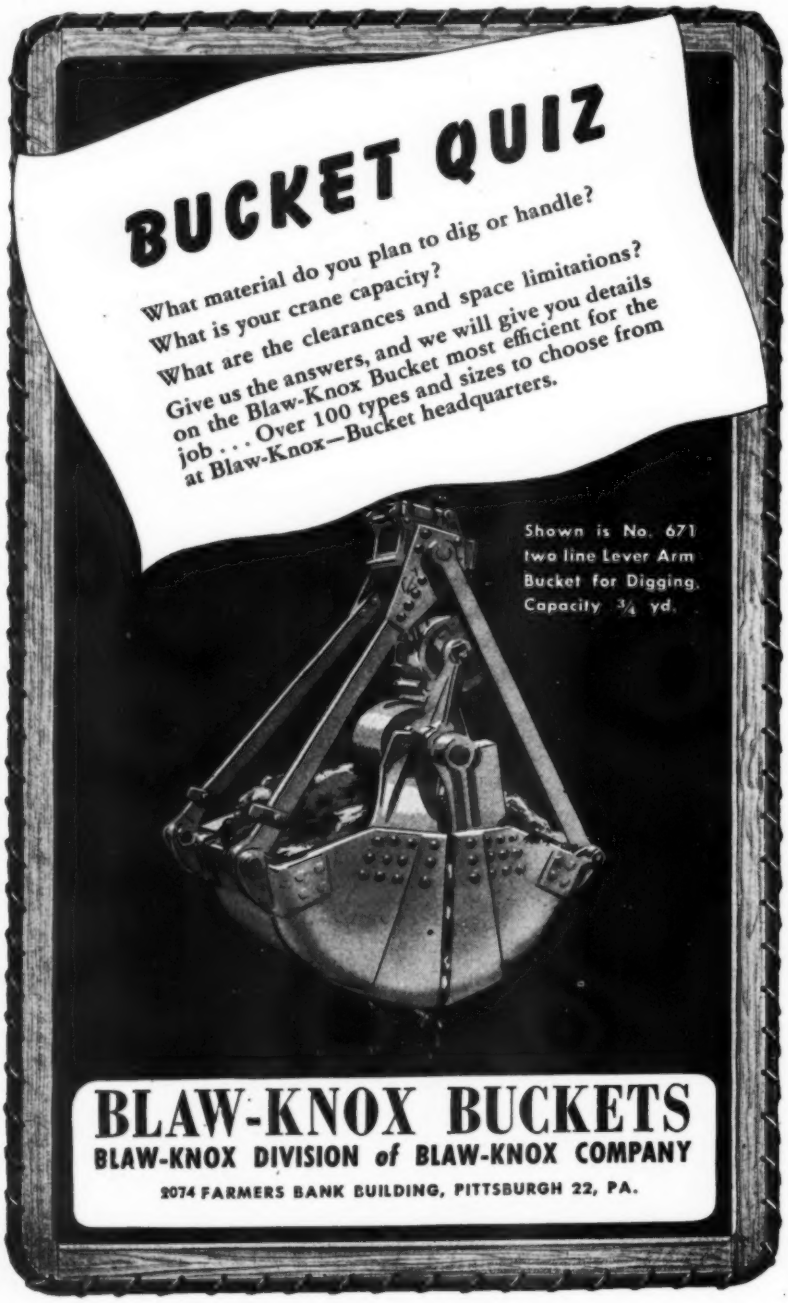
Vice President-at-large, Herman Riebe, of Palmerton; chairman, executive committee, Edward A. Daylor, Coatesville; treasurer, S. Howard Brown, Grantville; and A. E. O'Brien, Harrisburg was re-elected executive-secretary.

A. Harden Coon of Luzerne, and Morgan Cousler of York, were elected to the board of governors to serve until December, 1949.

Those elected to the advisory board of the association are:

H. D. Maxwell, Jr. of Easton, retiring president; Joseph Sproul of Scranton; James J. Skelly, of Media; Roy E. Smith, Dillsburg; John F. Keelor, Perkiomenville; W. L. Dunn, of Cochranton; Alex Bailey, of Philipsburg; A. B. Markunas, of Sunbury; Benjamin Banks, of Wilkes-Barre; A. J. Fasenmyer, of Erie; Clyde Shaull of Mechanicsburg, and D. C. Finston of Philadelphia.

Regional vice presidents elected and announced at the meeting are: District 1—E. E. Strohm, Erie; District 2—Earl M. Brown, Clearfield; District 3—John Bruns, Hazleton; District 4—Frank Kukurin, Wilmerding; District 5—Bernard Cramer, Lebanon; District 6—Austin Meehan, president of The Contractors Association of Philadelphia.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Despite 1946 Lag Road Program Nears Normal

The Nation's highway program lagged during 1946 because of labor and material shortages, high bids, and lack of adequate engineering personnel in State highway departments. But despite these handicaps, the dollar volume of work contracted for approached the level of contract lettings for road work in normal years before the war.

Public Roads Commissioner Thomas H. MacDonald pointed out, however, that many of the large projects placed under contract during the closing months of the year will not be advanced to the active construction stage until spring.

Reports received by the Public Roads Administration, Federal Works Agency, from State highway departments showed that contracts were awarded in 1946 for improvements on 43,600 miles of roadway at a cost of approximately $740,000,000.

This figure included contracts for work on 17,900 miles of highway in the Federal-aid primary and secondary road systems, at a cost of $512,000,000. Projects financed entirely with State and local funds called for expenditures of $228,000,000 for improvements on 25,700 miles of road.

As examples of progress in individual States, Pennsylvania placed 1,117 highway projects under contract between January 1 and December 28. The projects comprised 1,715 miles of road construction costing $57,700,000.

In the same period California awarded contracts for 344 projects on 1,025 miles of highway at a cost of $53,700,000. Texas let contracts for 685 projects costing $52,500,000, on 4,650 miles of roadway. A large portion of the mileage placed under contract in Texas, Commissioner MacDonald said, was for improvements on secondary or farm-to-market roads.

The Federal-Aid Highway Act of 1944 authorized an appropriation of $500,000,000 in each of the first three fiscal years following the war to assist the States in a three-billion dollar postwar highway program. Funds apportioned among the States for each fiscal year are available for use over a two-year period. They may be expended for improvements on the regular Federal-aid system, for work on sections of the Federal-aid system in urban areas, and for the development of a Federal-aid system of secondary roads in each State.

The amount of road work placed under contract in 1946 was not controlled by funds which were available for a larger program. Other factors controlled the situation. Unstable economic conditions and scarcities of labor and materials were reflected in high contract prices which increased the dollar volume of the program but, in effect, reduced the volume of construction.

Shortages of labor and materials may continue to delay the highway program in 1947, but the States should proceed with plans for projects that can be put under contract when conditions are favorable, the Public Roads Commissioner suggested.

Report 1946 Activities of Bureau of Reclamation

The Bureau of Reclamation awarded contracts during calendar year 1946 totaling more than $158,160,000, completed five projects, and proceeded with construction on 21 dams included in 41 active construction projects, Secretary of the Interior J. A. Krug reported.

Commissioner of Reclamation Michael W. Straus said that major activities included start of construction on four units on the Missouri Basin, as part of the comprehensive plan for that area; steps toward completion of exhaustive studies for development of the Colorado River Basin; operation of 52 irrigation and power projects serving 5,000,000 people and generation of 11,189,000,000 kilowatt-hours of hydroelectric power with sales volume of $21,428,000.

Other Activities

Other 1946 highlights:

Construction began on four major units of the Missouri Basin Plan. These were the Boysen and Kortes Dams in Wyoming, Angostura Dam in South Dakota. A contract was awarded for Enders Dam and Reservoir of the Frenchman-Cambridge unit in Nebraska, but construction did not start before end of the year. Several other units were nearly ready for construc-

(Continued on page 98)

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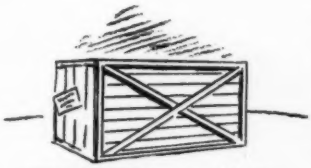

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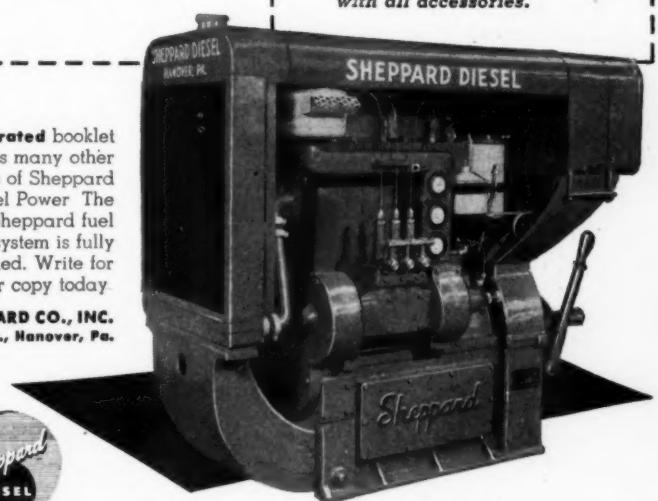

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TOURNAPULLS HANDLE on Colorado Big Thompson

8 Tournapulls average 11 trips per hour on 3700' round trip ... keep Hesser Construction Co. ahead of schedule.

At 8200' altitude, Hesser Construction Co.'s 8 Tournapulls are pouring earth into Colorado's Granby Dikes on output records that L. J. Hesser says, "no other equipment will equal".

Working in clay and gravel, each Tournapull high-balls a 3700' round trip every 5½ minutes . . . delivers 11 loads per hour. Rigs haul loaded down 5% grade over well-maintained road, which is sprinkled to keep down dust . . . spread their loads in 6" layers on the dikes . . . and return up 5 to 15% grades to the borrow area. To maintain this high rate of Tournapull production, Hesser occasionally uses both snatch and push tractors in extremely hard-loading materials. Project engineers' monthly estimate shows Tournapulls averaging 11 pay yards per trip.

Thus, the entire million and a half yards are being moved by these fast, big rubber-tired Tournapulls . . . with the job currently reported well ahead of schedule.

Tournapulls drive in from Greeley

The Tournapulls were driven in to the job via highway from Greeley, Colorado, making the 153 miles in 14 hours. This made it possible for the rigs to start moving dirt within 3 days after the contract was signed.

Hesser, a repeat Tournapull buyer, standardizes on LeTourneau equipment and has been specializing on landleveling and irrigation work with Tournapulls. Two of his rigs on the Granby Dikes have over 8000 hours and Mr. Hesser comments that "upkeep and maintenance have been very low."

Visit Granby ... see for yourself

By all means, if you get out to Colorado, look over this Tournapull job . . . see for yourself what these modern, rubber-tired, high-speed dirtmovers can do . . . or ask your LeTourneau Distributor for *job-proved* facts and figures of profitable Tournapull performance on all kinds of jobs . . . in all types of materials . . . on both long and short hauls.

ENTIRE 1,500,000 YARDS River Dike Project

Tournapull spreads its load in 6" layer on the fill, as another high-balls back to the cut.

Empties return up 15% grade to cut over well-maintained haul road.

Engineers' monthly average of dirt moved shows Tournapulls get 11 pay yards per load.

Overall construction view of Colorado's Granby Dikes which will provide storage basin for more than 482,000 acre-feet of water.

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LET FOR LOWEST NET COST PER YARD

• This Bucyrus-Monighan walking dragline doing open cast coal mining for the British Ministry of Fuel and Power is at work on Newcastle "Town Moor," an open space of 2,800 acres given to the citizens for their free use by decree of King John 700 years ago. Some hundreds of acres are now turned over to coal mining, also by government decree. The Bucyrus-Erie blast hole drill to the right is used for sinking holes for blasting operations being carried on ahead of stripping.

SHOTS from the Firing Line

(Continued from page 95)

tion as planning advanced during the year.

Construction was begun on the Friant-Kern Canal on the Central Valley project in California, and on the irrigation system for the Columbia Basin project in Washington. The 13-mile long Alva B. Adams tunnel on the Colorado-Big Thompson project to bring Colorado River water through the Continental Divide to the eastern slopes of the Rockies in Colorado was lined with concrete and virtually completed.

A comprehensive report on the Colorado River Basin was issued. Climaxing years of joint investigations and surveys, the report points to the second stage of development in the area. Last of the structures of the first stage—which included Boulder Dam—was Davis Dam, between Arizona and Nevada. Construction on Davis Dam was resumed during the year.

Comprehensive surveys were in progress in many major basins and on more than 200 sub-basins and projects.

Christopher Gets Post On Columbia Project

Willis C. Christopher, 54, a native of Genesee, Idaho, with many years' experience in designing irrigation works in the United States and Mexico, has been transferred from the Boise office of the Bureau of Reclamation to Ephrata as Assistant Supervising Engineer, Irrigation Division, Columbia Basin Project.

Delaware Names New Chief Highway Engineer

William A. McWilliams of Dover has been named chief engineer of the Delaware State Highway Department to succeed W. W. Mack, also of Dover, effective Jan. 1.

Mack, who has been with the department for 29 years, the last 19 as chief engineer, will be retained as special consultant.

McWilliams, a veteran of both World Wars, was promoted from an assistant chief engineer in anticipation of the heavy construction program confronting the department during the next three years. He has been with the department 19 years, the last year in charge of construction and maintenance.

Ernest Muncy was reelected secretary of the department, a post he has held since 1940. W. B. McKendrick Jr. was continued as an assistant chief engineer.

Bishop Manages ARBA County Officials Group

Hubert K. Bishop, a former deputy commissioner of the Public Roads Administration and well-known highway engineer, has joined the American Road Builders' Association as manager of the County Highway Officials Division and the Municipal Division. Mr. Bishop succeeds Major John A. Long who resigned last summer.

Report New Construction Exceeded $10 Billion

The total value of new construction of all types during 1946 will probably exceed $10 billion, but the industry has set its sights on a goal of at least $15 billion for 1947, according to John L. Haynes, Chief of the Construction Division, Department of Commerce.

In a year-end statement summarizing the achievements of the industry, Haynes said that although 1946 construction was more than double the $4.8 billion total of 1945, a large part of the

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war-time backlog of demand will be carried over into 1947.

If this backlog is to be substantially reduced in 1947, he said, the $15 billion goal will be broken down about as follows: 40 per cent for residential building, which means about 1,100,000 housing units including many multi-unit dwellings; 30-35 per cent private non-residential building to provide additional space and facilities for expanding business; and the remaining 25 to 30 per cent for public works—highways, public buildings, schools, hospitals and recreational facilities.

This 1947 goal cannot be met unless building materials are provided at a rate equivalent to the peak production periods of 1946, Haynes said. Peak production cannot be maintained during 1947 unless costly labor stoppages are avoided in the major industries such as iron and steel, coal, transportation and metal fabrication.

Lack of construction labor was not too serious a problem in 1946, but the outlook is that a larger number of workers will be needed next year to convert the anticipated larger output of building materials into completed homes, factories, offices and schools.

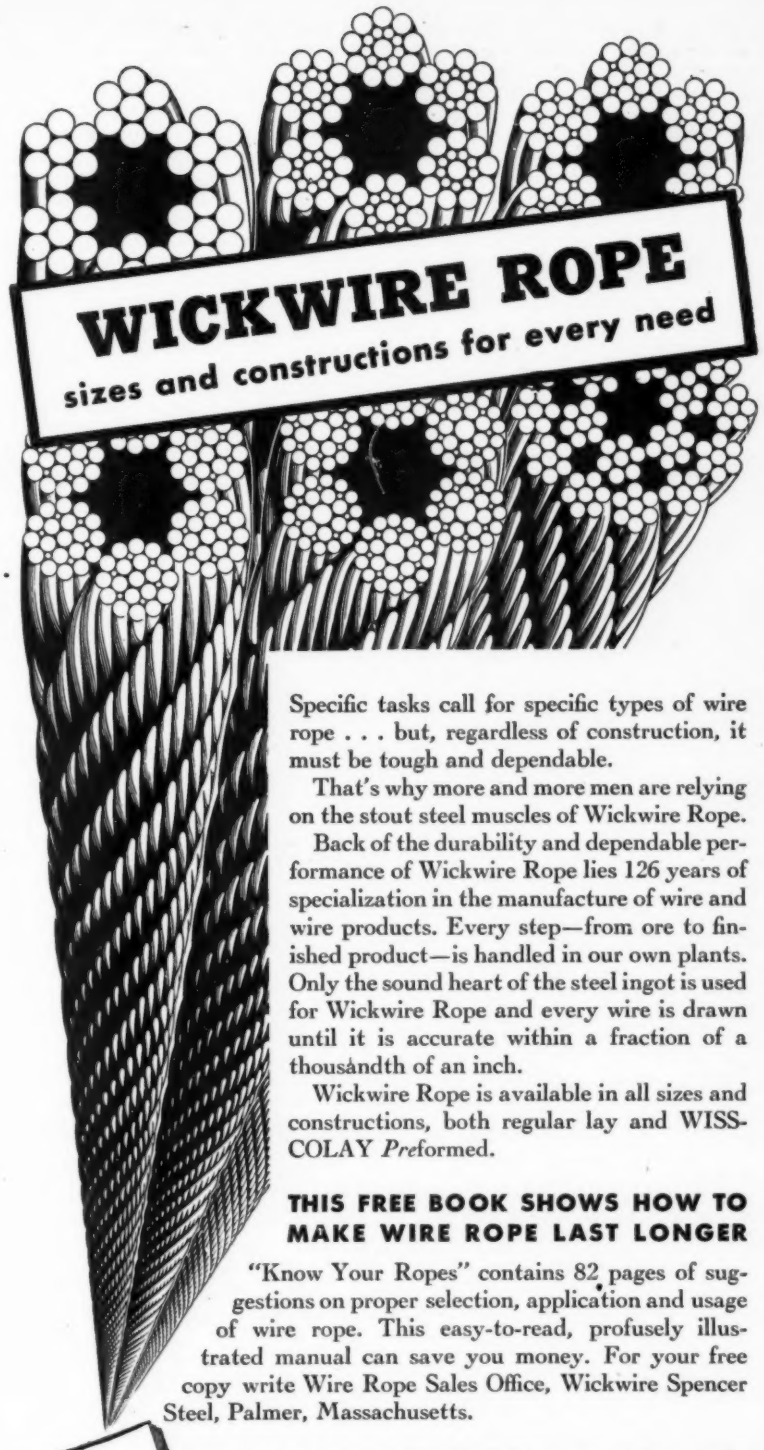
If supplies of both materials and labor are adequate during 1947 the industry should be able to increase the efficiency of its operations as well as increase its productivity. This may go a long way towards relieving the pressure toward higher prices for construction and help convert the enormous volume of accumulated need for new building into effective demand.

In reviewing the achievements of 1946, Haynes said that one of the most significant features of construction was the large volume of private building, which amounted to $8 billion or about 80 per cent of the dollar volume of all construction.

This volume of private construction is in marked contrast with the war years of 1942-43 when private construction accounted for only 22 per cent of the construction total, and with 1945 when 55 per cent of all building was privately financed and 45 per cent was government financed.

Whether measured in dollars or in physical units, the amount of construction during 1946 is very large, Haynes said. However, because of the substantial increase in costs during the year, the physical volume is not as great as the $10 billion figure would indicate.

Nevertheless, the value of work completed in 1946 represents an outstanding accomplishment, particularly because it was achieved in the face of difficulties. Building material plants that had been closed down entirely or had been converted to the manufacture of other products for war, had to be re-opened and reconverted. New crews had to be hired, and in many cases entire organizations had to be established or re-established. Added to those purely physical difficulties were the economic problems involved in commencing operations while materials were scarce and



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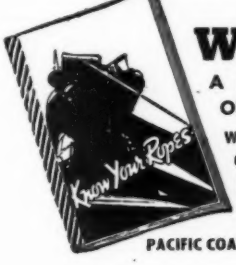

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prices were high and continually rising. This combination of factors gave rise to uncertain and unstable markets.

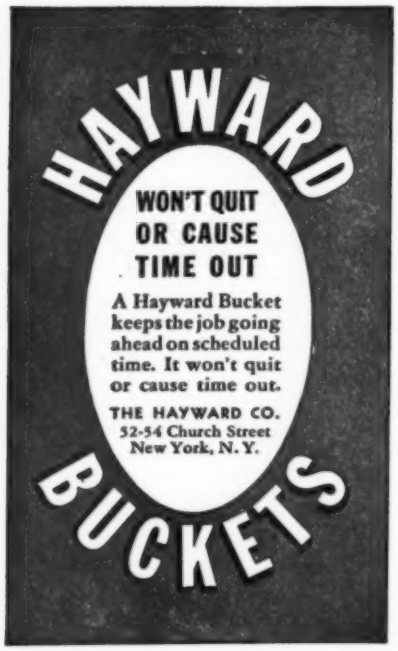
The problems facing the construction industry in 1946 were so acute that unusual measures were taken. Since these controls were effective to a large extent, their impact on the industry could not be disregarded and they caused considerable controversy within and outside the industry as to whether the checks and accelerations offered by the operation of these controls were worth the adjustments that had to be made to permit them to operate.

Because of the critical need for housing, much of the 1946 program was centered on the Veterans Emergency Housing Program approved by the Congress. Early in 1946 a goal of 1,200,000 new dwelling unit "starts" was set. It now appears that nearly 85 per cent of the goal has been achieved, Haynes said, as about 1,000,000 dwelling units of all types were started during the year.

Included in this million are almost 700 thousand permanent dwellings. Actual completions of permanent dwellings during 1946 totalled nearly 500 thousand, of which about 125 thousand were started in 1945. It is an encouraging prospect for next year that the great volume of building now in progress will provide a base for even a larger volume of construction next year, if the basic coal and steel industries are able to maintain fairly stable operations.

From the long term point of view, the industry's greatest need is the development of more efficient labor productivity, improved methods of construction and cost reductions all along the line.

Expenditures of large amounts of money by private interests and by the Government in reaserch on construction problems offers great promise for improving the homes and health of the people and contributing to the general welfare, Haynes said.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Louisiana Reports on 1946 Road Program

State highway construction and maintenance expenditures in Louisiana during 1946, carried on under the Department of Highways and exclusive of administration, engineering, etc., amounted to $12,696,928. New construction work continued to be limited during 1946 due largely to the inability to secure rights-of-way and to shortages of certain materials and labor, whereas maintenance costs increased due to the efforts to restore the highways that deteriorated during the war years and to higher costs, according to the department's annual report.

● Grading floor of garage extension with Bucyrus-Erie ½-cu. yd. dragshovel owned by Geo. Woods, Lebanon, Ind.

Construction work, including betterments and replacements, during 1946, amounted to $2,893,099 which figure is only about a half million dollars more than was expended in 1945 for the same class of work.

Also, completed during 1946 were 7.7 miles of reconstruction of state highways at seven locations resulting from levee set-backs and the placing under construction of an additional 3.2 miles of levee set-back reconstruction at three locations.

The total cost of routine and extraordinary maintenance during 1946 covering a maintained system of 14,526 miles of state highways amounted to $9,020,238, an increase of approximately 50% over expenditures for the same class of work in 1945. In addition to higher costs, much of this increase is due to rehabilitation of highways that had deteriorated during the war years because of lack of materials, equipment, and labor. The continued shortage, especially of equipment, has resulted in the department being forced to handle a large part of the reconditioning by public contract and special maintenance projects by state forces. The completed portion of this work totals $2,448,900 covering 972 miles of road, with $1,438,587 covering 386 miles of road being uncompleted and carried forward to 1947. This reconditioning cost is in addition to the routine maintenance cost during the year of $6,571,338 on the balance of 13,555 miles of roads in the state maintenance system.

State aid to parishes during 1946, which consisted of repair and reconditioning of approximately 1,978 miles of school bus routes, mail routes and farm-to-market roads that are not included in the state system of highways, amounted to $666,543.

Expenditures for (1) highway planning surveys, consisting of engineering and economic research, and (2) surveys, design and preparation of plans and estimates for postwar construction projects under federal aid advance engineering, post-war investigation and post-war survey programs amounted to $117,048. This amount is exclusive of engineering work undertaken by the department without Federal assistance.

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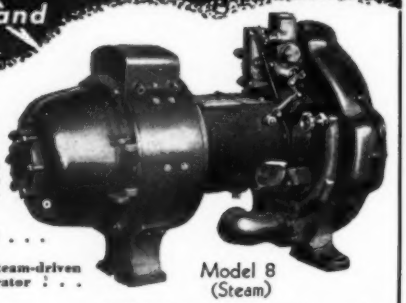

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3. AUTOMATIC CUT-OFF on larger capacity Steam-driven models prevents overload damage to generator . . .

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Send in your old Moon generators for rebuilding now — we can give prompt service.

PROGRAM FOR 1947

The program of state highway work in Louisiana during 1947 will consist of the continuance and completion of those projects now under construction; the placing under construction of work which has been deferred during the war and postwar periods and new work where increased traffic will require the rebuilding of sections of state highways to higher standards; the construction of emergency replacements of such bridges and surfacing that fail or otherwise becomes unusable by the public and reconstruction of roads destroyed by levee set-backs; and the continued maintenance of the state highway system. New construction work that can be let to contract during the year 1947 will depend to a large extent upon securing of rights of way, engineering and other personnel, equipment and materials necessary for the preparation and carrying out the program of work necessary to be undertaken.

Funds now available to the department of highways and that will become available during the year for operation, highway maintenance and construction work, including both state and Federal funds, total approximately $92,891,061 This figure includes the balance of $7,-139,743 of regular and emergency federal aid allotted to the state prior to the Federal Highway Act of 1944 and $14,860,324 of federal funds allotted to the state for the first two post-war years, both of which amounts must be matched by state funds in the required ratio. However, since all of the funds available for construction cannot be placed under way during 1947, it is estimated that only $38,854,665 of the total available will be used for construction, maintenance and operation during the year and the balance of $54,036,396 will be carried over for future work.

The cost of the uncompleted portion of construction projects, including betterments and replacements, now underway and carried forward to 1947 amount to $4,333,246. Contracts for new construction work, to be let during 1947 for projects which at the present time are reasonably expected to be carried out are estimated to require $13,257,477 for construction and $1,483,-560 for right of way costs. Hence, the estimated cost to the department for continuance and completion of those projects that were active at the beginning of the year, added to the estimated expenditures for new work, will amount to an estimated $19,074,283 to be expended on betterments and replacements during 1947. Included in new construction on which it is expected that contracts will be let during the year will be the following work: 40 miles concrete pavement; 70 miles bituminous surfacing; 100 miles aggregate surfacing; two miles hydraulic embankment; 25 major bridge and overpass projects, and four scale installations.

The cost of routine and extraordinary maintenance for 1947 on the maintained highway system of 14,526 miles is estimated at $14,438,586. This amount includes estimated expenditures of $7,-000,000 for routine maintenance, $1,438,586 for uncompleted work carried forward from 1946, and new work amounting to $6,000,000 for reconditioning of concrete pavement, resealing of asphalt roads, repair of bridges and reconditioning of gravel surfacing.

State aid to parishes during 1947 as a form of assistance to the parishes in the resurfacing and reconditioning of an estimated 2,470 miles of school bus routes, mail routes, and farm-to-market roads is expected to amount to $886,979.

During 1947 the amount to be expended with Federal Aid assistance on highway planning and surveys is expected to amount to $1,605,336 exclusive of engineering work to be undertaken by the department without Federal assistance. This work consists of engineering and economic research, surveys, design and preparation of plans and estimates for proposed highway construction projects, and is divided into programs as follows: advance engineering $226,922; post war investigations and surveys $931,598; and 1946-47 highway planning projects $446,816.

Kentucky Rents Equipment From Ex-servicemen

More than 40 bulldozers, angle dozers, patrol graders and other heavy equipment needed for work on rural highways in Kentucky are being rented from

(Continued on page 166)

There's the RUB!
...and wherever wire rope works over sheaves—and on drums—there are also bending stresses. Heavy loads, too, add their burden.

You can depend on "Hercules" (Red Strand) Wire Rope to meet all conditions, because it is the right combination and balance of strength, toughness and durability. As it is made in Round Strand and Flattened Strand constructions—both Preformed and Non-Preformed—there is a correct type for every heavy duty purpose.

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Something New

WITH a displacement of over 4000 tons and hull length of 246 feet, the "Stuyvesant," one of two identical units now being built by Bucyrus-Erie for tin mining service off the Netherlands East Indies isle of Banka, is the largest placer dredge ever to be built in the United States.

But it is the "Stuyvesant's" design, not its size, which is of most significance to placer mining. Typical of its "years ahead" engineering is the widespread use of Ward-Leonard variable-voltage control, permitting variations of speed and power in digging and maneuvering to suit the variable operating conditions always encountered. Use of this control eliminates many factors which limit output in fixed-speed operation by putting power to work in the amount and kind required. With power so metered, the "Stuyvesant's" 216-foot digging ladder with its string of 148 14-cubic foot buckets, with both deck- and ladder-mounted idlers, can supply the 128-cell all-jig washing plant at the varying optimum rate for highest overall efficiency.

This application of Ward-Leonard control to placer dredging concretely illustrates Bucyrus-Erie's ability to draw on both specialized experience and a wide general background in designing and building placer dredging equipment. In taking your dredging problems to Bucyrus-Erie, you look to the only dredge manufacturer who has the advantage of experience gained not only in 66 years of building placer dredges but in the same number of years devoted to producing almost every type of excavating and earthmoving equipment for both dryland and underwater operation.

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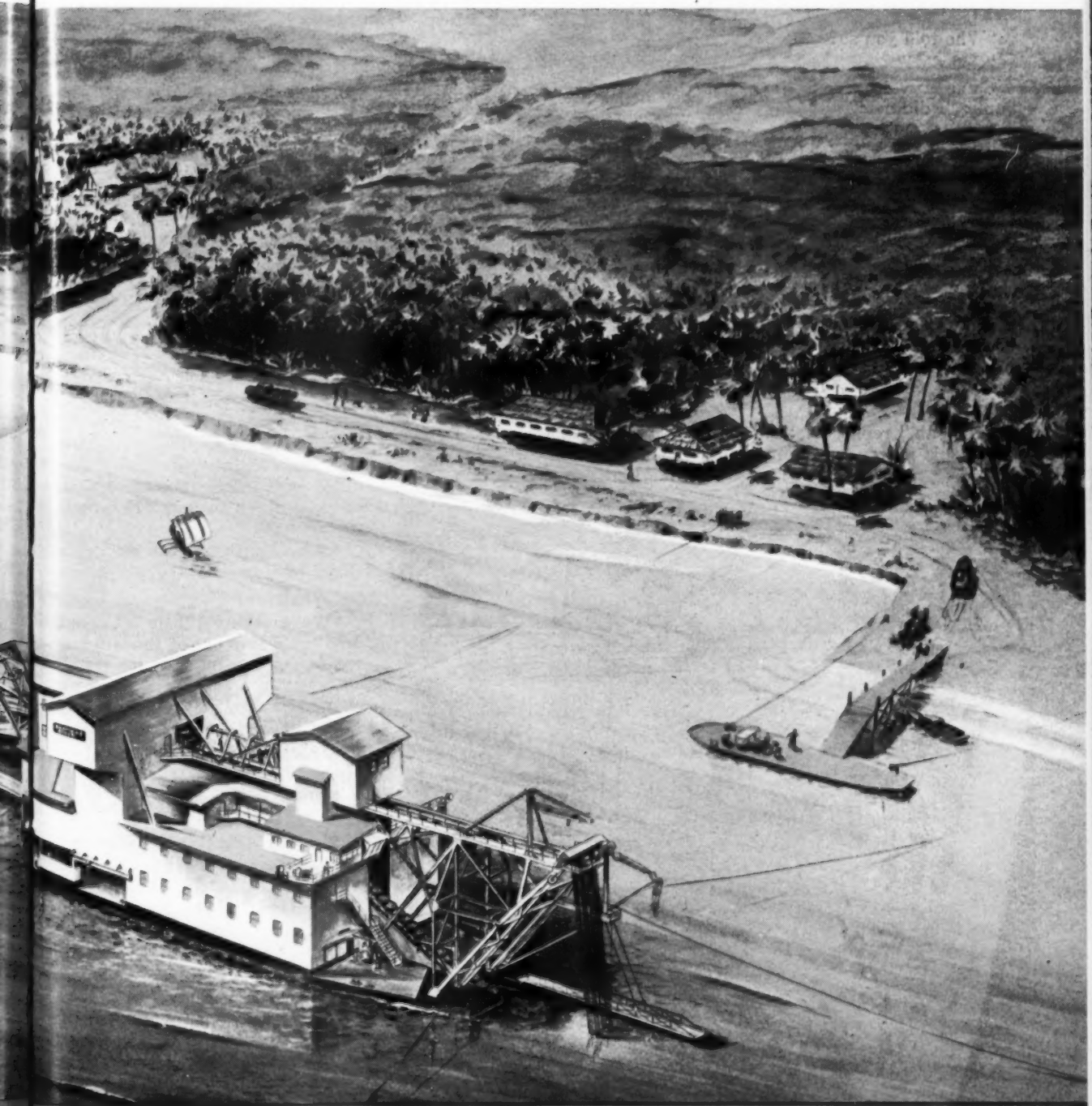


...IE COMPANY, So. Milwaukee, Wis.

NOT in the *Contract*

The new head man at an insane asylum was trying to convince an inmate that he wasn't Napoleon.

"I know dern well I'm Napoleon!"

"Who told you so?"

"God did!"

Came a voice from the next bunk: "I did not!"

"But you can't withdraw your plea of guilty after the case has been heard."

"Well, you see, jedge, dat speech ob my lawyer don 'vinced me I'se innocent."

Mandy went into the bank and, digging down into her ample bosom came up with 35 dollar bills to deposit. "Why Mandy," said the teller, "have you been hoarding?"

"No, sah," replied Mandy. "Ah made this money takin' in washin'!"

"Daughter, I hope that's a nice book you're reading."

"It is, mother, except it's so sad at the end. The girl dies and he has to go back to his wife."

The railway coach was crowded and a none-too-well dressed little boy had taken a seat alongside a very haughty and fashionably dressed woman. The boy was sniffling in a very annoying manner. Finally the woman turned to the boy and asked:

"Have you got a handkerchief?"

"Yes," replied the boy, "but I don't lend it to strangers."

A Chinese had a toothache and phoned the dentist for an appointment.

"Two-thirty all right?" asked the dentist.

"Yes," replied the Chinese. "Tooth hurtee all light. What time I come?"

"He's the new foreman—the boss wants him to straighten out this helluva mess we got things into!"

A young flapper was permitted the use of her father's car on the promise that she would not drive over forty miles per hour. Forty was reached with such ridiculous ease, and fifty was just a wee bit of throttle beyond, that the first thing the girl knew, a motorcycle appeared in the "cop detector" and she knew she was in for a ticket, dad's wrath, and no more use of the car.

So she obeyed the first impulse and tramped on the accelerator hoping to lose the law in her dust. Sixty—seventy—eighty and finally ninety. But the cop hung on.

Suddenly she spied a filling station just ahead. Slamming on the brakes, she slid to a stop and made a wild dash for the ladies' wash room.

Ten minutes later she emerged demurely powdering her nose, and before the irate cop could get in a word, flashed him a golden smile and with a sigh of relief announced, "Boy, that was a close one!"

A boy was told to report to a woman that her son had been killed in a fall, but warned that he must break the news in a tactful manner.

"Mrs. Smith, here's an apple that I owe your son."

"What for?"

"Well, we had a little bet about who could lean out of the window the farthest—and your son won."

A priest walked up to a young man hanging on to a lamp post.

"Shame on you! What have you been drinking?"

"Three Fathers, Feather."

Farmer: "Be this the Woman's Exchange?"

Woman: "Yes."

Farmer: "Be you the woman?"

Woman: "Yes."

Farmer: "Well, then, I think I'll keep Maggie."

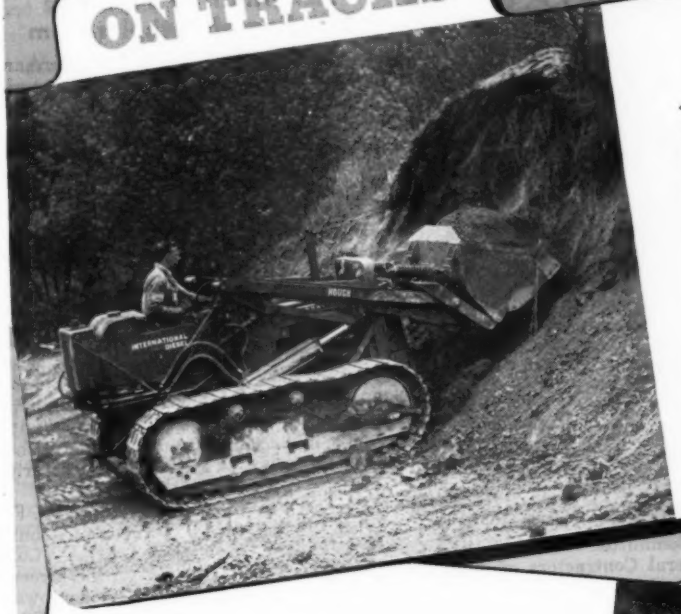
"Now, remember," shouted the district attorney at the defendant on the witness stand, "everything you say will be held against you."

"Betty Grable, Betty Grable, Betty Grable!"

HOUGH "HUFF"

Digging Power

ON TRACKS



MODEL 9-A BULLDOZER SHOVEL

Here's full 1 yd. capacity in a Bulldozer-Shovel built specifically for the International T-9 or TD-9 TracTractor. The Model 9-A is a real DUAL-PURPOSE unit — a rugged versatile Shovel and a powerful full-fledged Bulldozer, to handle a wide variety of excavating, stripping, loading, grading or any bulk materials. Packed with exclusive features — unique in design, thoroughly job proved in every detail, the Hough Model 9-A can be relied upon for maximum daily yardage at the lowest net cost per yard.

ON WHEELS

MODEL HL Payloader

For construction, excavation, maintenance or general bulk material handling the powerful 1 cu. yd. HL Payloader can take over and cut yardage costs sharply. Built big and powerful, easily maneuvered, perfectly balanced, the HL is built from the ground up for heavy duty material handling service. Digs, loads, carries, dumps and spreads; available with bulldozer blade and crane attachment, the HL is the most versatile unit of its kind.

SEND for Catalog No. 164 on the Model 9-A and Catalog No. 163 on the HL today.

THE FRANK G. HOUGH CO.

MATERIAL HANDLING EQUIPMENT SINCE 1920

708 SUNNYSIDE AVE., LIBERTYVILLE, ILLINOIS

• Power shovel clearing war rubble in Warsaw, Poland.
Authenticated News Photo

SHOTS from the Firing Line

(Continued from page 101)

ex-servicemen, J. Stephen Watkins, Commissioner of the Kentucky Department of Highways said. The GI-owned equipment was purchased through priorities with the War Assets Administration.

"Rentals on bulldozers net the GI from $7.50 to $12.00 per hour, and in many cases have been continuously used for as much as 200 hours," Watkins said. "Our own short list of equipment has been heavily taxed and it was increasingly evident that more road building machinery would be necessary to handle maintenance and construction on the many miles of rural highways in Kentucky.

"While it has been the practice to rent equipment from contractors and counties for this work, this is the first year we have been able to obtain individually owned heavy road machines. In a great many instances, the GI-owner was employed to operate his own machine."

AGC and AED Establish Joint Committee

The establishment of a Joint Cooperative Committee between the Associated General Contractors of America and the Associated Equipment Distributors is announced by H. E. Foreman, Managing Director of the A. G. C., and C. F. Winchester, Executive Secretary of the A.E.D.

In making the announcement, Foreman and Winchester stated:

"Establishment of the Joint Cooperative Committee between the two nationwide organizations provides a continuing means through which contractors and equipment distributors can secure a better understanding of their mutual problems, and through which practical suggestions can be developed for working toward improved conditions in the construction industry.

"Establishment of the national committee also provides a framework for cooperative action which can be carried out by A.G.C. chapters and branches and A. E. D. regional organizations in their respective communities.

"Among the subjects which have been suggested for discussion are problems of surplus equipment, equipment sales contracts, servicing new equipment, repair parts orders, day labor, and equipment standardization."

Ackerman to Supervise Building of Potholes Dam

Appointment of Louis B. Ackerman as resident engineer to supervise construction of the 3½-mile Potholes Dam for the million-acre Columbia Basin Irrigation Project in Eastern Washington was announced by Supervising Engineer H. A. Parker of the project's Irrigation Division.

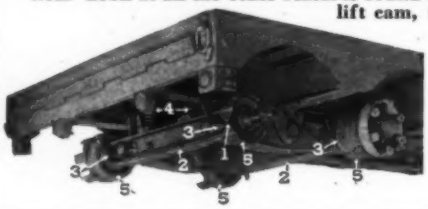
Mr. Ackerman has directed the building of irrigation works for the Bureau of Reclamation since 1927. He was connected with the Columbia Basin Project from 1935 to 1941, working out of Coulee Dam and Wenatchee. He subsequently served as resident engineer for the Mann's Creek Project in Idaho, resident engineer for the Gooding Division of the Minnedoka Project, Hunt, Idaho, and construction engineer for the Post Falls unit of the Rathdrum Prairie Project, Idaho.

Meanwhile, a spokesman for the C. F. Lytle Construction Company, Sioux City, Iowa, Amis Construction Co., Oklahoma City, Okla., and the Green Construction Co., Des Moines, Iowa, who recently were awarded the $9,359,011 Potholes Dam contract, named personnel to head their field force.

William H. DeButts, chief engineer for the Lytle Company, said that Phil C. Royer, superintendent for the Amis Construction Co., will be general superintendent in charge of construction of the Potholes Dam. Mr. Royer, who inspected the dam site recently, will take over the job in about a month when equipment and supplies are expected to

BE SURE YOUR NEXT TRAILER HAS ALL THESE FEATURES

• Deep, wide flange main beams running the full length of the trailer, I-Beam sections for cross-members and outriggers, improved, fabricated gooseneck, and all electric-welded construction. Look at all the other features found only on Jahn tandem axles: (1) constant lift cam, (2) two full-width axles attached to longitudinal rocker beams, (3) worm gear type slack adjusters at each wheel, (4) heavy coil springs at each axle and (5) positive equalizing braking at each wheel regardless of position of axle.



JAHN TRAILERS ALL OVER The WORLD!

C. R. JAHN COMPANY
1349 W. 37th PLACE, CHICAGO 9, ILL.
Heavy duty trailers from 5 to 100 tons.

arrive at the dam site, eight miles south of Moses Lake.

F. M. Case, office manager for the Lytle Company, will be office manager for the contractors, DeButts said. A temporary office has been opened in Moses Lake pending construction of a headquarters building and other camp buildings at the dam site.

"We will hire only a few men to begin with," DeButts explained, "and it will be at least a year until we reach our peak employment of about 300. Building of the Potholes Dam is mainly an earth-moving job for heavy machinery. And before we can start on the dam, we must construct access roads, a railroad siding, and camp buildings."

Anderson Embankment is Now 96% Completed

With the placement of clay in Anderson Ranch Dam halted for the winter, Construction Engineer Donald S. Walter notified Regional Director R. J. Newell of the Bureau of Reclamation that the embankment is 96 per cent complete, with only about 360,000 cu. yds. of material of the 9,053,300 cu. yd. total remaining to be added.

Commenting on Walter's report, the Regional Office of the Bureau said that approximately 2,890,000 cu. yds. of material have been added to the structure during the year by the Morrison-Shea-Twaits-Winston Company, contractor. The record year was highlighted by placement of the most material in a single month and in a single day. During September, 423,000 cu. yds. of material were added to the structure and on September 18 a new high was reached with 20,680 cu. yds. for the day.

Walter said that placement of material in two semi-pervious zones and in rock-fill and riprap sections continued to December 1, and then only necessary maintenance and minor other work will be done because of lack of funds for the project.

Congress allotted $1,234,475 in the regular appropriations bill and later added $802,206 in a supplemental appropriation. Nearly all of the funds made available have been used up to maintain orderly progress on the embankment.

Considerable work remains to be done on the spillway, outlet works, power plant, relocated roads and reservoir clearing. About 65 per cent of work on the spillway is completed, 83 per cent on the outlet works, 61 per cent on relocation of roads, and 64 per cent of the reservoir clearing. Excavation for the foundation of the powerhouse has started.

In announcing the shut-down of clay-placing activities, Walter said that the two-mile long conveyor belt which has been used to carry clay from the Dixie borrow pit would be dismantled as soon as possible. The conveyor system transported 4,375,000 cu. yds. of clay for the embankment. The remaining clay requirement—less than 140,000 cu. yds.—probably will be transported by trucks next spring.

Anderson Ranch Dam when completed will be the highest earth-fill dam in the world and will store 500,000 acre-feet of water to supplement existing supplies in the Boise Valley. The dam provided 80,000 acre-feet of storage this season.

Roads Play Big Part in Movement of Coal From Pits

America's roads play a considerable part in the movement of coal from pits and stripping operations as well as in coal deliveries to homes and stores, said Charles M. Upham, engineer-director of the American Road Builders' Association. In a statement issued to engineers, he pointed out that 15 per cent of all the bituminous coal and lignite mined in the United States starts on its way to the stoves and furnaces of the nation over highways.

Mr. Upham cites figures from the U. S. Bureau of Mines showing that in 1944, 91,993,932 net tons out of a total record-breaking production of 619,576,240 net tons left the mines by truck or wagon.

Some 40 million tons, or 6½ per cent, were truck shipments while 8½ per cent was destined for railway sidings or points for transfer to water haul.

"In 1944, with figures closely approaching peace time operation, 45

Continued on page 110)

for
Safe, Easy Operation

Husky, powerful machines . . . built to handle the most difficult work . . . yet, with OSGOOD Air Control, operating an OSGOOD is simple and easy. A bank of five hand levers and two foot pedals, all within convenient reach of the operator, provide safe, positive control of the principal operations of an OSGOOD.

And OSGOOD Air Control is measured—low pressure for smooth, even operation, high pressure for powerful, steady travel. Here's ease of operation that means more work, in less time, on any job. Plan now to choose an OSGOOD . . . a complete line of power shovels, draglines, cranes, clamshells, backhoes and pile drivers . . . a model for every type of work.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. O-G THE GENERAL CO. EXCAVATOR

MARION OHIO

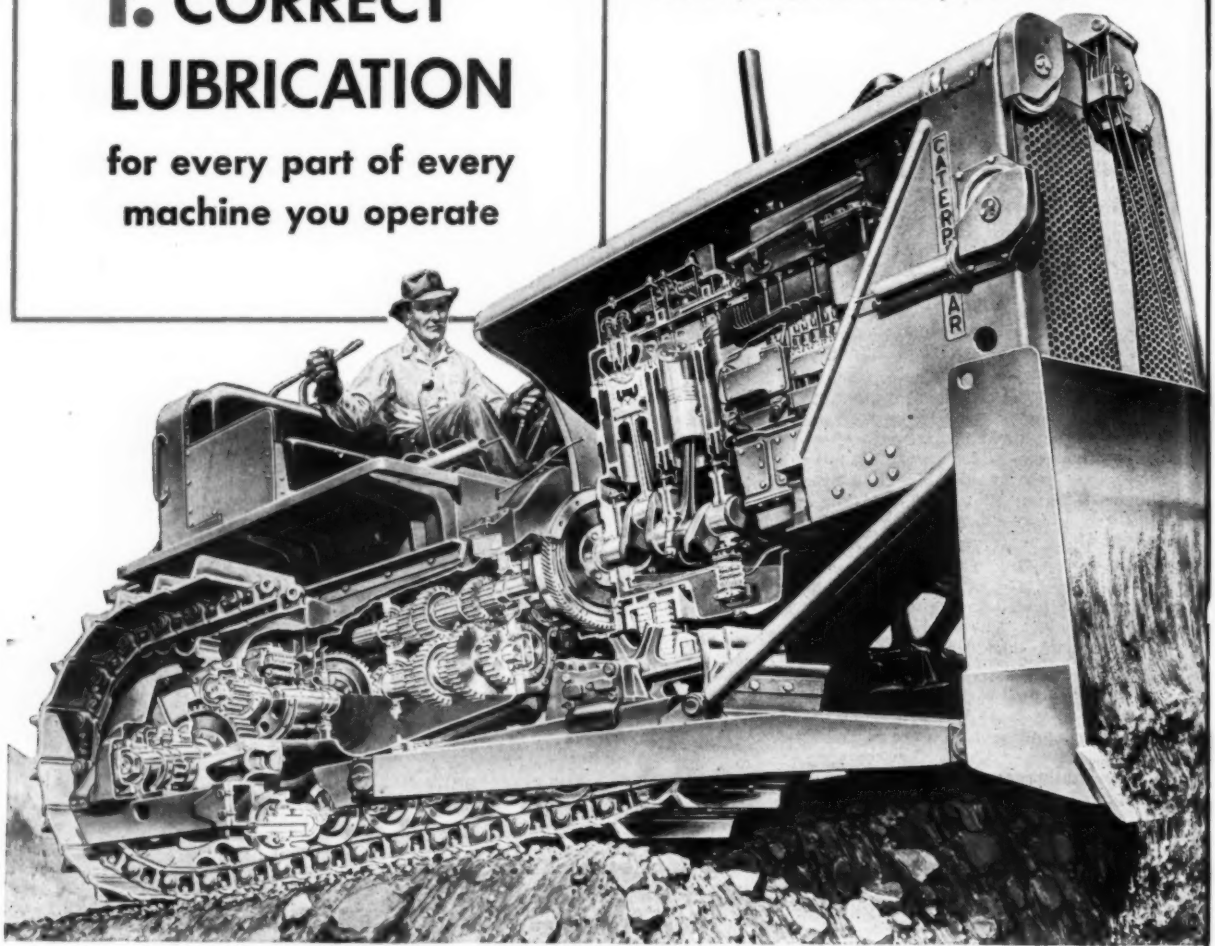
DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

We Offer Practical Job-Proved Methods

1. CORRECT LUBRICATION

for every part of every machine you operate

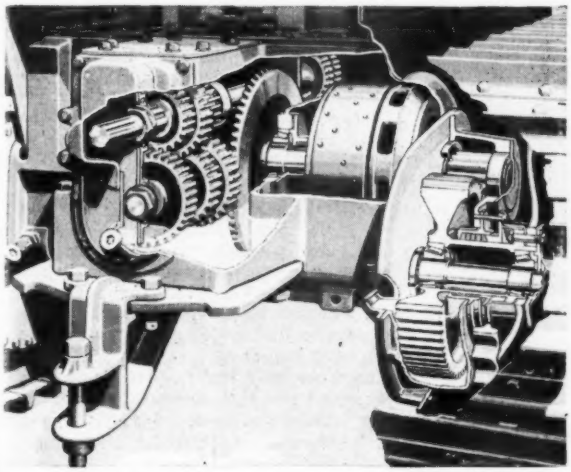
● Oils specially designed for hard-working high-speed Diesels and gasoline engines provide . . . maximum performance . . . protection against corrosion . . . resistance to sludge formation . . . cleaner engines.



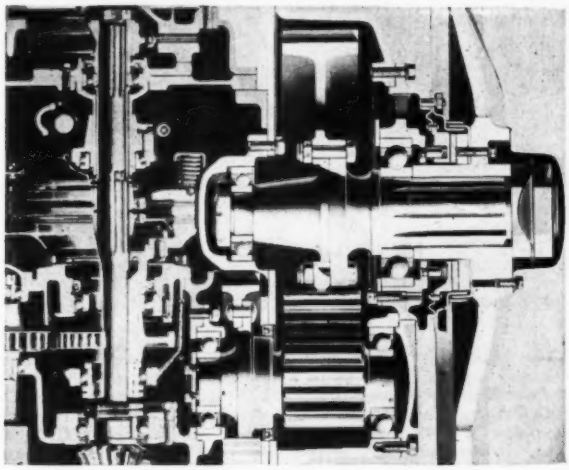
Rely on SOCONY-VACUUM CONTRACTORS' SERVICE

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: Magnolia Petroleum Company, General Petroleum Corporation

...to Help Keep Your Machinery Working!



● The right lubricants for *all* types of gears, open or enclosed, offer protection against wear, reduce friction, assure transmission of full power for long periods.



● Correct oils and greases for all bearing applications, anti-friction or plain . . . combat heat, friction and wear . . . stay put to carry the load.

2. TIME-SAVING SERVICE

for all divisions of your operation

HERE ARE just a few of the ways we help you ease tight work schedules, meet and beat contract deadlines:

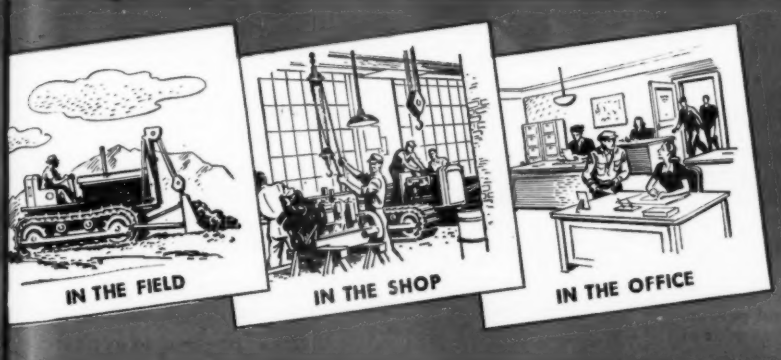
1. Supply you with tested maintenance schedules adapted to *your* equipment, *your* set-up.

2. Give you practical help on "problem" machines.

3. Provide information on the Do's and Don't's of Correct Lubrication.

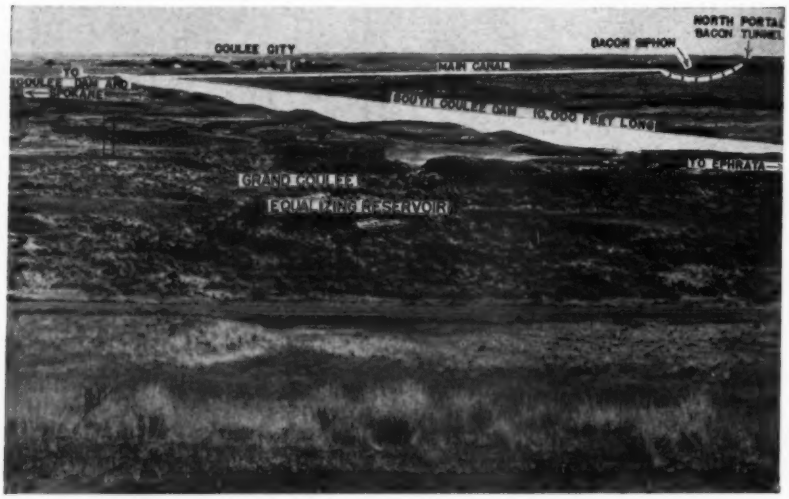
4. Supply your requirements for oils and greases as promptly as possible.

5. Help simplify inventory problems. In the field, in the shop, and in the office . . . all through your operation . . . this service saves time. See your Socony-Vacuum Representative for full details.



SOCONY-VACUUM

Tune in THE MOBILGAS PROGRAM—Monday Evenings, 9:30 E.S.T.—NBC



• This is an artist's conception of the eventual location of some of the structures of the Columbia Basin Project which is now taking shape in the vicinity of Coulee City, Wash.

Stretching for nearly two miles across the famed Upper Grand Coulee is South Coulee Dam, which will help form a 27-mile reservoir for the Bureau of Reclamation's million-acre irrigation development. The dam will carry U. S. Highway 10-A across its top. In the distance the river-size Main Canal is shown taking off from the dam toward the project lands. The Bacon Siphon, in the right background, will convey the water across a deep coulee and into the Bacon Tunnel, 23 feet in diameter, which will pierce a lava barrier for 10,000 feet.

SHOTS from the Firing Line

(Continued from page 107)

million tons or 7.7 per cent of the total production of 582 million tons represented truck shipments, with only 3.7 per cent going to shipping stockpiles," Upham said. "It is significant that among the 29 coal states, some of the largest producers made truck shipments well over the general average. Pennsylvania, second to West Virginia the leading coal region, shipped 9.2 per cent over highways; Illinois, third on the list, shipped 11.9 per cent; and Ohio, fifth, hauled 20.5 per cent via road.

"Estimated coal production for 1945 indicates a seven per cent decline from the all-time high of 1944, but the ratio of truck shipments will probably follow those of 1942, it is believed," Upham continued. "It will also be noted that 54,000 communities in the United States have no rail connections and must depend on highways for coal and everything else they use."

Kentucky Reports Road Building Activities in 1946

Correlated reports from several divisions of the Department of Highways indicate that 1946 has been a banner year for road building in Kentucky, J. Stephen Watkins, Commissioner, states. Work contracted and in process on completion included 192 active projects costing a total of $18,185,800. With the department's fiscal year three-fourths gone, state maintenance operations have cost over $6,000,000 and included surfacing, re-surfacing, sign posting, patching, and other "up-keep" of state highways. About $3,750,000 of the appropriation for rural state aid on county roads has been expended or encumbered.

"Kentucky's state system has in process of completion, new locations, hard surfacing and re-surfacing a total of 1,999 miles of highways." Contracts for 1946 on the state system provid for 12 new bridges and two grade separations. Bridge structures were started which will cost nearly $5,000,000. About $3,000,0000 of the work has already been awarded in contracts. The year witnessed the completion of Clay's Ferry Bridge. Livermore toll bridge was freed of tolls and the two remaining state-owned toll bridges are well on the way to free service, several bond reductions having been accomplished during the year.

"Kentucky's highway system is today in better shape than ever before in the state's history," Major Thomas H. Cutler, who has just rounded out 10 years of service in the department, as State Highway engineer reported. "Even though we have had a shortage of both personnel and equipment, the first postwar year has witnessed splendid results in both construction and maintenance. With next year's possibilities for new construction and the hoped-for return of more normal equipment conditions, we should be able to make great strides toward many more miles of fine highways."

Study Methods to Raise Funds For Vermont Roads

Study of the possibility of increasing motor vehicle fees for both passenger and commercial vehicles to raise funds for highway construction was recommended by the Vermont State Highway Department in its biennial report.

Including funds needed to match available federal aid, the department's proposed budget is $6,299,765.70 for the fiscal year ending June 30, 1948, and $6,927,451 for the year ending June 30, 1949. For the same two fiscal years the anticipated income from present sources is $5,043,598.75 and $5,265,156.25, respectively. Thus, unless additional revenue is made available, the department

A ROCKING BEAM Trailer?

YES HERE IT IS!

• Rogers also builds trailers for unusual needs, embodying characteristic features of fundamental design but modified to meet the special requirements.

For example, consider the above illustrated

ROGERS TRAILER

• This is the new Model T trailer which has two rocking, box-girder sections at each end of which is a spindle, carrying a wheel and two extra large tires. This design gives the desired oscillation and permits building trailers only 8 feet wide in capacities up to 35 tons. This two axle trailer meets the needs existing in some states that limit the tonnage that can be carried on one axle.

Write for information on standard or special trailers which have been tested in difficult service.

ROGERS BROS. CORP.
136 ORCHARD ST. ALBION, PA.

EXPERIENCE . . . . builds 'em
PERFORMANCE . . . . sells 'em

• Testing equipment for large tires and wheel equipment in the off-the-road field. This dynamometer truck designed by The Goodyear Tire and Rubber Company has a free rolling wheel below the cab used to measure distance and speed during testing operations.

points out, there will be a deficit of $2,918,461.70 on June 30, 1949.

"The new federal aid highway act of 1944 has doubled the amount of federal money which previously was available to Vermont," the department explains. "It now becomes necessary that the State appropriate over $2,000,000 a year to match these federal funds if we are to participate fully in the revised federal aid highway program," the report stated.

New Hampshire Needs $115 Million for Roads

A total of $115,000,000 is needed to rebuild, widen and relocate New Hampshire's highway system, it was estimated by the State Highway Department in a report submitted to the governor and council.

This figure, it was pointed out, is about 20 times the total revenue received by the department for the fiscal year ended last June 30.

Also outlined in the report was a five-year program costing about $45,000,000.

AED Annual Convention Scheduled for Feb. 13-15

The 28th Annual Convention of the Associated Equipment Distributors will be held February 13, 14 and 15 at the Edgewater Beach Hotel, Chicago, Ill. It is expected that 1,400 executives of member companies from the construction equipment industry will attend the sessions.

The sessions will begin at noon Thursday, Feb. 13, and the convention will adjourn the following Saturday afternoon. The annual banquet is scheduled for the evening of Feb. 14. The 1946 AED Board of Directors will hold its last meeting also at the Edgewater Beach Hotel immediately prior to the Convention, and the 1947 Board will meet Sunday, Feb. 16.

F. B. McBath, Portland, Oreg., AED president will preside

G. A. Morison Retires as Bucyrus-Erie Vice Chairman

George Abbot Morison relinquished his duties Jan. 1 as vice-chairman of the Board of Bucyrus-Erie Company, South Milwaukee, Wis., to make his home on the New Hampshire farm where he was born and which has been in his family for over 200 years. Mr. Morison will continue his connection with Bucyrus-Erie as a member of the Executive Committee of the Board of Directors.

A graduate of Phillips Exeter Academy (1896) and Harvard College (1900), Mr. Morison came to South Milwaukee in 1901, with the then Bucyrus Company as a machinist apprentice at $25 a month. After two years in the machine shop he was transferred to the engineering department and later organized a new production department.

In May, 1905, he was made assistant secretary of the company and has successively served as: secretary, 1910-1927; 2nd vice president, 1924-1927; treasurer, 1927-1930; vice president, 1927-1943; vice chairman, 1943 to his retirement.

Mr. Morison was active in Milwaukee civic affairs for many years. Among his many civic interests are the Community Fund, Columbia Hospital, Milwaukee Downer College, Milwaukee Orchestral Association, Milwaukee Country Day School, and other benevolent and financial organizations.

Active in a number of Harvard alumni affairs, he has been president of the Associated Harvard Club and a director of the Harvard Alumni Association. At present he is a member of the Visiting Committee of Harvard Engineering School.

Multiple Rope
Power Arm
Dragline
The Leader
IN WELDED CONSTRUCTION
WELLMAN
Williams Type BUCKETS
Wellman pioneered in the welded construction of rolled steel buckets. Priceless experience, superior engineering and the finest type of construction guarantee you more satisfaction from your Wellman-built buckets.
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7002 CENTRAL AVENUE • CLEVELAND, OHIO

Equipment you ought to KNOW ABOUT

Self-Priming Pumps

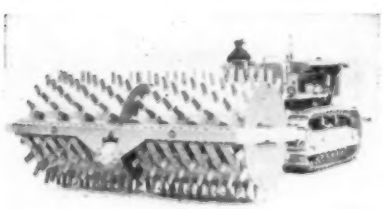
Manufacturer: Worthington Pump and Machinery Corp., Harrison, N. J.

Claims: Self-priming action without priming valves or "recirculation" is one of the outstanding features of the new Blue Brute line of portable self-priming centrifugal pumps. Fabricated of corrosion and abrasion resisting steel, the pumps are regularly equipped with pneumatic tired wheels, towing handles and lifting bales with the exception of the smallest size (1-½") which is base mounted with lifting handle. 1-½" to 4" pumps are available with standard air-cooled gasoline engines, while 6" and 8" units are equipped with water cooled engines, either gasoline or diesel.

Giant Tampers

Manufacturer: Wm. Bros Boiler and Manufacturing Co., Minneapolis, Minn.

Claims: Tagged Model G-2, this new Bros tamper has been designed to meet compaction requirements of such varied jobs as earth dams, airport runways, and



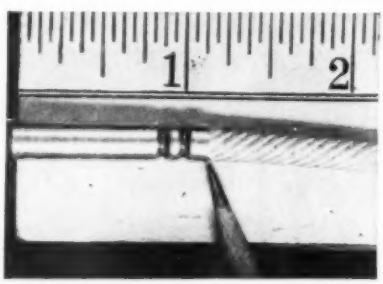
highways. The average pressure on each foot varies as follows: Empty drums, 2,350 lbs.; water-filled drums, 4,000 lbs.; and wet sand-filled drums, 5,660 lbs.

Having a shipping weight of 18,800 lbs., the oscillating type roller consists of two 76-inch drums, designed around a "full-floating" pole. This principle allows for full individual drum oscillation and with either angular or parallel lifting which allows one drum to float upward or downward four inches independently of the other one with both on a parallel plane.

"Big Inch" Fuse Cap

Manufacturer: Olin Industries, Inc., East Alton, Ill.

Claims: Using RDX, said to be 50% more powerful than TNT, the "Big Inch" is the smallest blasting cap ever developed. It is slightly more than 1-⅛ inches in length and less than ¼-inch in diameter. Made of shining aluminum, the new caps are easily found when accidentally dropped on dark mine floors. Because of



its smallness, the cap is easy to bury in the smallest stick of dynamite, and reduces the risk of its being struck with a tamping bar. The caps, which can withstand the shock of a heavy impact without detonating, can be used in all types of blasting work such as in quarries, open pits, metal mines, highway excavations, etc.

New Paint

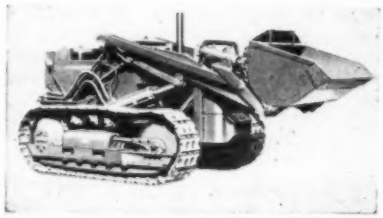
Manufacturer: Speco, Inc., Cleveland, Ohio.

Claims: Known as Rustrem, this industrial paint can be applied directly over rusty surfaces without cleaning or scraping. It seals the surface and stops rust permanently. Wherever metal must be protected, regardless of submergence in water or exposure in moist or fume-laden atmosphere, Rustrem prevents further oxidation and provides a base for decorative paints.

Bulldozer-Shovel

Manufacturer: Frank G. Hough Co., Libertyville, Ill.

Claims: A dual purpose unit, the Model 9-A Bulldozer-Shovel may be equipped with either a full track width 1-yd. bucket or bulldozer blade. Specifically built

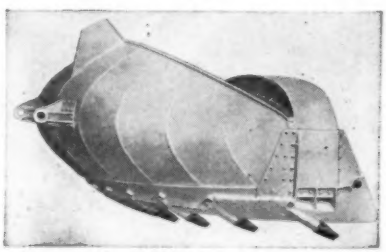


into the International T-9 and TD-9 TracTracTor, the original tractor balance, stability and traction are maintained. The bucket is raised, lowered, dumped, and relatched entirely by hydraulic control, and it tilts back automatically in carrying position preventing spillage. A long, high dumping reach is provided for dumping into trucks, hoppers, etc., and unique design of push-arms provides powerful crowding action in digging range.

Crescent Scraper

Manufacturer: Sauerman Bros., Inc., Chicago, Ill.

Claims: Largest of the Crescent scraper buckets is the new 15 cu. yd. "Mammoth" now in use



for open pit mining, stripping, levee construction, and similar work. Because of its reduced weight-strength ratio, the bucket can be operated by a power unit scarcely larger than was required for the company's former 12-cu. yd. scraper.

(Continued on page 114)

TIME

is your most precious commodity

Save it with

THE NEW PB-8 Paving Breaker

Time is usually the deciding factor on any job. Extra hours mean the difference between profit and loss, and they are just as important in wrecking as in building.

Whether your job is breaking concrete—digging clay—cutting asphalt or pounding backfill—our NEW heavy-duty paving breaker, the PB-8, will do the job quicker. With interchangeable fronthead, it will also drive sheeting or spikes.

The NEW PB-8 is a real time-saver. A new-type, double-kicker port valve and a sturdy block piston give it greater hitting power... Full air cushioning guarantees long life... Throttle selectivity permits easy starting ... Four-bolt handle construction assures rigid joints... Controlled lubrication guarantees smooth, economical operation... Longer handles mean larger gripping surface and greater ease of handling... A long anvil block bearing assures correct alignment... Fronthead springs and bolts are extra strong.

These are the features that make this NEW PB-8 Paving Breaker low on maintenance and a real profit maker.

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PORTABLE COMPRESSORS • ROCK DRILLS • AIR TOOLS

New Equipment

(Continued from page 112)

Truck Crane

Manufacturer: Koehring Co., Milwaukee, Wis.

Claims: The Koehring 304 Truck Crane, utilizing the same base machine as the 304 crawler model, has a lifting capacity of 40,000 lbs. with outriggers and 15,800 lbs. without them. Both are 85% ratings. Designed for easy handling on street or highway, the crane can go where trucks travel. A time-saving feature is the hinged boom which folds easily when it is time to move the machine. Pendant boom suspension simplifies changes in boom length and materially reduces the cost of boom suspension cable. Booms are available in lengths up to 110′. Jib Boom extensions are offered in 15′ to 30′ sizes. Removable outriggers are optional and permit efficient operation as a shovel, pull shovel or dragline.

Rapid Reverse Winch

Manufacturer: Gar Wood Industries, Inc., Detroit, Mich.

Claims: A new series of single lever truck and tractor Rapid Reverse winches originally developed for the armed forces for use in conjunction with the company's Ordnance, Air Force and Navy wrecking cranes. The three sizes in current production are: 15,000, 30,000 and 60,000-lb. pull.

Instantaneous change in direction is achieved under full speed by a single straight-line shift without engaging or disengaging the engine clutch. Use of the engine clutch is necessary only at the beginning and end of the job. The shock of engagement at full load and speed is absorbed by a torflex sprocket with rubber bushing. The winches lend themselves readily to remote control, and operating levers can be placed anywhere on the truck and can be operated by hand power, vacuum or air.

Fire Extinguisher

Manufacturer: Union Stop-Fire Corp., Brooklyn, N. Y.

Claims: A stored-pressure hand extinguisher that enables the user to attack a fire in any direction, up or down, or to either side by merely aiming the hose where desired. Using a combination of carbon dioxide and carbon tetrachloride, the extinguisher shoots a fine spray up to 25 feet and is effective in smothering oil, gasoline, and electrical fires with rapidity. The fluid is effective indefinitely and the tank does not have to be refilled, except when used. A pressure gauge attached to the extinguisher indicates fluid pressure at all times.

QUICK FILL
SMOOTH CARRY
CLEAN DUMP

RED ARCH
OUTPUT

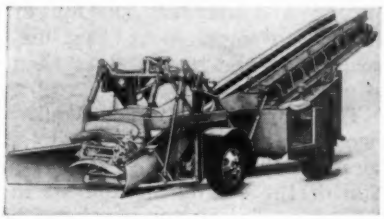
With teeth and sharp cutting edge correctly angled for fast digging, with balanced design for speedy, smooth carrying, with smooth curved interior for quick clean dumping, a Bucyrus-Erie Red Arch bucket will give YOUR dragline more cycles every hour, more dirt every pass, more money-making output every day. Red Arch buckets are built in three types for light, medium, and heavy digging. Sizes range from ⅜ to 25 cubic yards. Write today for full information on the size and type you need. 2R45

BUCYRUS ERIE
South Milwaukee, Wisconsin

Force-Feed Loader

Manufacturer: Athey Products Corporation, Chicago, Ill.

Claims: Designed for such jobs as road widening, resurfacing, ditch building, slope dressing, etc., this new Model 3 Athey Force-Feed Loader possesses many new features including finger tip hydraulic control. The



Model 3 works as a companion tool for the "Caterpillar" Motor Grader and has four levers for raising and lowering feeder, moldboard, throat, and conveyor. New conveyor and throat design, and positive belt alignment are other improvements incorporated in the loader.

Hydro-Crane

Manufacturer: Milwaukee Hydraulic Corporation, Milwaukee, Wis.

Claims: A new development in the crane-excavator industry is the Model H-2 two-ton Hydrocrane which employs full hydraulic control for every operation, eliminating all gears, clutches, brakes and drums. The entire unit including boom, hoist, swing, and clamshell bucket is hydraulically operated. The standard tubular boom raises, lowers and telescopes from 16′ to 22′ under hydraulic power which enables the operator to spot loads accurately, reach into box cars, over walls or piling, between beams or into buildings. 360° swing is provided.

Designed for small scale jobs, the H-2 mounts on 1½-ton trucks or special 6x6 drive Jeeps available at the factory. For clamshell service, a standard ¼-yd. bucket, hydraulically powered, is available as well as a hydraulic low headroom bucket for congested quarters.

Two-Unit Plant for Rock and Gravel

Manufacturer: Pioneer Engineering Works, Minneapolis, Minn.

Claims: Unit consists of a two-unit plant of high capacity, completely portable, flexible, and light enough in weight to pass state highway limits. Low headroom is also afforded, simplifying and increasing maneuverability. Two units are provided for each plant set-up: a primary unit and a secondary unit. In each type set-up, that is for rock or for gravel, the secondary unit remains the same but the primary unit is different.

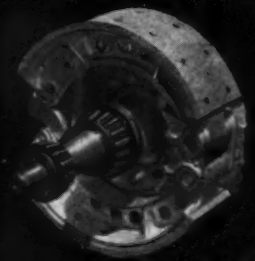
Type 81 Excavator

Manufacturer: The Osgood Co., Marion, Ohio.

Claims: The Osgood Type 81 is a modern designed shovel, dragline, clamshell, crane and backhoe of medium size. The three crawler mounted machines are: Model 810 of 1½ cu. yd. capacity; Model 816 of 1¾ cu. yd. capacity, and Model 817 equipped with wide tread crawler, and long crane boom for dragline, clamshell or crane service. All models are readily interchangeable from one class of service to another in the field.

In addition to the three models mounted on crawlers, the Type 81 is also available as an Osgood Mobilcrane, the Model 815 self-propelled and one-man operated crane mounted on pneumatic tires.

GATKE
BRAKE BLOCKS



Custom-Bilt
for Trucks, Tractors, Trailers, Buses, Cars and Heavy Duty Equipment

Smooth, non-grabbing action that adds countless miles to tire life and reduces strain on driver and equipment.

Balanced holding power for positive stopping under all conditions.

No let down in efficiency on long grades.

Long wear life with fewer adjustments to keep vehicles on the road, maintaining schedules with SAFETY.

These are a few of the many Extra Values GATKE CUSTOM-BILT Brake Blocks give you. They are saving time and money for fleet operators, LARGE and small, all over America.

RESULTS TALK: Use GATKE Brake Blocks for your next five relines and compare performance with the best you ever had.

Ask your GATKE Jobber or write.

Gatke CUSTOM-BILT BRAKE LININGS
BLOCKS SETS ROLLS SHEETS
GATKE CORPORATION
228 N. La Salle St. Chicago 1, Ill.

More Volume

(Continued from page 71)

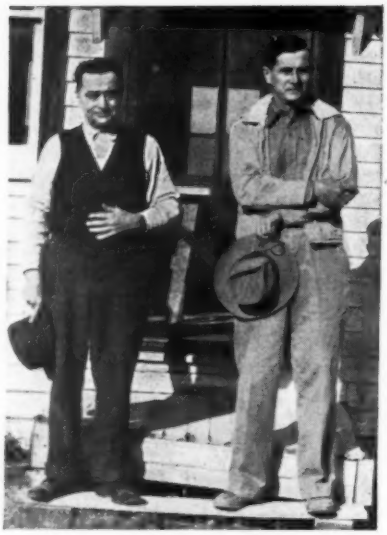
to the washing side of the plant, from where it can be loaded directly to cars, sent to a pulverizing plant west of the main plant for making into fine-ground materials or returned for recrushing into agstone by an American hammermill or ACS ringmill. The plus ½-inch is fed direct to the washing screen from where it goes by chute to railroad cars as a material sold for use in making lime.

The washing screen is a single deck Robbins 3′x10′ in size and is primarily a rinser. The water for rinsing comes from a settling basin north of the plant via a Wieman pump of 140-ft. head and 3-in. suction located in the engine room of the plant. The water and washings flow through a steel flume to a primary settling basin still farther north, from which the first water flows back to the settling basin feeding the pump. Settlings from the primary basin have been used for fill in extension of the track incline.

Materials made in the Raymond pulverizer range from 50% passing 200-mesh screen to the extreme fines, such as 99% passing 300-mesh. Products are sacked in various types of containers, but the type most in use is a paper valve bag.

A new pulverizing unit was being installed at the time of our visit and was expected to be in operation by early 1947. To be housed in a steel beam structure the new unit, it is anticipated, will double the output of fine-ground materials to be sold for such uses as feed mixes for stock, roofing filler, asphalt road fillers, etc.

Over 90% of the material of all classes produced at the Valmeyer plant moves out in railroad cars, and the other 10% is loaded to trucks. The railroad serving the plant is the Missouri Pacific, Illinois division, while trucks use Illinois state highway No. 156 which in turn connects with Illinois highway No. 3 at Waterloo, ten mile east. The last mentioned road affords a direct route to St. Louis, East St. Louis, Granite City, etc. At one time a ferry was operated across the Mississippi river near the plant site, but was abandoned because landing conditions on the Illinois side proved unsatisfactory.



• Superintendent of the Valmeyer plant is Fred A. Krewer (right). With him is T. E. Cheyney.

Besides the pump, the engine room houses electricity-generating equipment which supplies almost all the power for the entire quarry—a plan used by Columbia Quarry Co. at all its plants. Three Superior diesel engines are in continuous use for this purpose. One is an eight cylinder, two are six-cylinder, and all three operate at 400 rpm., developing an aggregate horsepower of 1400. This practice of producing their own power eliminates the usual sources of annoyance due to power failures of all kinds. An outside electrical connection is, however, maintained with the Illinois Power Co. The connection is at present used to provide current for lights, but, prior to the recent addition of the third diesel engine, was depended on for a supply of 400 hp. of energy to supplement that developed by the two engines then in operation.

The engine room also houses two 800 cfm. Sullivan air compressors, which supply air for operation of the drilling equipment in the mine. The air travels through a six-inch air line to air receivers in the mine, from where the air travels by lines of various sizes to the working places in the mine.

Both the engine room and the plant shop are housed in a rock and steel structure north of the plant. The old plant building and a number of other older units are of wood construction, but all new installations since 1937 have been either of all steel construction or of steel and stone, reflecting a change in the company's policy.

The Valmeyer plant is one of four present workings of the Columbia Quarry Co., which was organized in 1906 by E. J. Krause and C. H. Krause, his brother, both of whom were well known in stone production circles and were active in the company's direction until their deaths in recent years. The first plant was opened at Columbia, Illinois, from which the company took its name. The Columbia workings are still active, known as plant No. 1, as are the Valmeyer or No. 3 plant, the No. 4 plant at Prairie du Rocher, Ill., and No. 7 at Elsberry, Mo. The missing numbers represent inactive operating sites.

Columbia Quarry Co. is one of the largest producers of agricultural limestone in the country, with its Columbia workings alone producing 3200 tons a day or about 1¼ million tons a year.

The Prairie du Rocher plant produces some 400,000 tons annually, a large part of its output going to the glass manufacturing industry. The Elsberry quarry has been shut down for about a

• This stone and steel building houses engine room, power house, air compressors, and plant shop.

year, but the company plans to reopen it early in 1947, anticipating an annual production of 250,000 tons, largely agstone.

Present executive personnel of the company includes Pres. H. C. Krause, a son of E. J. Krause who died on Sept. 30, 1946; W. E. Schmidt, vice pres. and treas.; C. H. Krause, also a son of E. J. Krause, vice pres. and purchasing agent; and H. J. Elliott, sec. and ass't treas. The superintendent of the Valmeyer operations is Fred A. Krewer.

Road Fund Diversion

(Continued from page 77)

highway funds could be used for such purposes as veterans' housing until a full-scale highway construction program got under way.

Another obstacle in the path of the anti-diversionists is the fact that a number of states have so long practiced highway fund diversion that it is now a part of their fiscal structures that could not be eliminated without the substitution of new or added general taxes.

Strengthening the anti-diversion campaign, however, is the fact that states continuing highway fund diversion may face partial loss of federal road aid.

Re-open Crawhill Mine

(Continued from page 75)

terial. The hoisting car makes from 80 to 90 trips an eight-hour day from the bottom of the shaft to the hopper where the ore is dumped onto the grizzly by a raised rail automatic dumping mechanism.

Water that seeps into the underground workings is pumped out daily. The pump is started about 5 A.M. and operates about two hours to do the job.

Trucks from the preparation plant which is located nine miles away haul the ore and from eight to 25 loads, averaging seven tons a load, are hauled daily. Ore mined at Crawhall averages five to six per cent zinc, about one per cent lead and an average of six per cent iron pyrites.

Electrical power for operating mining equipment and furnishing light at the Crawhall Mine is purchased from the Galena Interstate Light & Power Co. and is brought to the mine property at 33,000 volts where it is reduced by transformer to 250 volts for use at the mine. About 28,000 kilowatts of power are used monthly at a cost of about $625.

Five Buffalo ventilating blowers, four ten-inch and one 12-inch, with two fans each are used for ventilating the mine. Four of the blowers are located above ground in a radius of 700 feet and one is in the underground drift for booster purposes. The blowers are operated 24 hours a day for the six days a week that the mine is operated.

The Meloy-Baker mine employs 16 men at present including nine men for underground work—shovel operator, two truck drivers, three drillers, hoist car loader, general laborer, and a shift boss. Four men are employed in the hopper and one man takes care of machinery and the compressor. There is also a watchman. Owners are J. F. & D. V. Meloy and G. M. Baker.

One Man Tank Corps

(Continued from page 78)

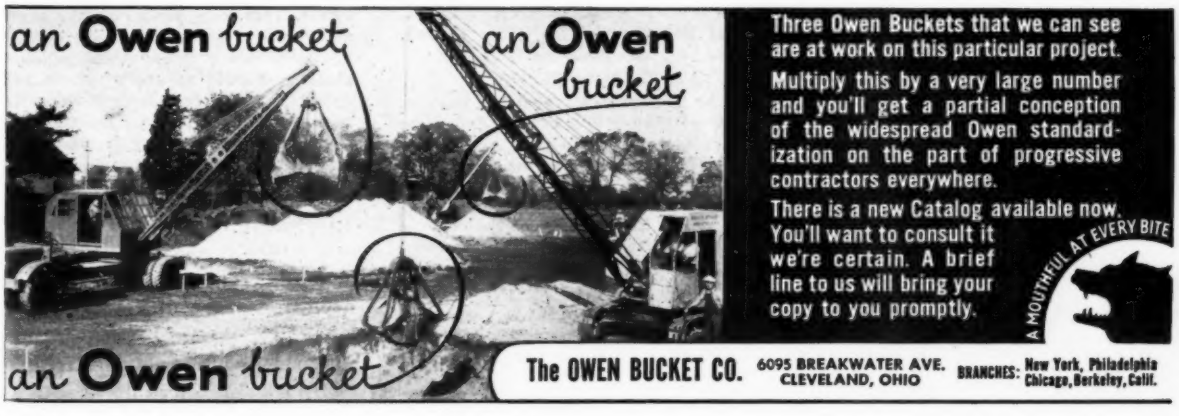
basements, cleaned out six others, and backfilled around walls in addition to grading the entire area, and cutting and rough grading the streets. In all some 8,000 cu. yds. of dirt were handled so far on the 48-acre subdivision being developed and built by H. A. Schulenburg Co., Kirkwood building contractor.

The first operation for the Dozer-Shovel on this contract involved stripping off the surface, leveling it, and putting in the beds for the streets. About 5,000 cu. yds. of dirt was stripped off, most of it spread for leveling but some spoiled off to the edges of the subdivision. Generally, the streets did not involve a great deal of digging, although a rise in the level of the land at one end necessitated making a cut of 4½ feet, the sides of which were later leveled off. Dirt from the street was spoiled off to each side and later filled around the finished houses.

The basement digging program was handled on a one-a-day basis. Basements averaged 225 cu. yds., of varying dimensions.

Through the entire contract, which was spread over a long period because the separate operations had to be handled intermittently, the Dozer-Shovel averaged about 30 cu. yds. per hour in output of dirt.

Panda Contracting is the postwar venture of ex-SeaBee Earl Dennis, whose experience in excavating dates back to before his war experience, which was spent at various Pacific outposts, principally in operating excavating equipment of all kinds.


an Owen bucket
an Owen bucket
an Owen bucket
Three Owen Buckets that we can see are at work on this particular project.
Multiply this by a very large number and you'll get a partial conception of the widespread Owen standardization on the part of progressive contractors everywhere.
There is a new Catalog available now. You'll want to consult it we're certain. A brief line to us will bring your copy to you promptly.
A MOUTHFUL AT EVERY BITE
The OWEN BUCKET CO.
6095 BREAKWATER AVE. CLEVELAND, OHIO
BRANCHES: New York, Philadelphia Chicago, Berkeley, Calif.

Notes from the manufacturers

Wickwire Spencer Steel Division of the Colorado Fuel and Iron Corp., Buffalo, N. Y. has appointed L. J. Renner manager of Mid-continent Wire Rope Sales. His offices will be located in Fort Worth, Texas.

Beckwith Machinery Co., Pittsburgh, Pa., announces that George N. Beckwith has been elected president of the company. Former president, J. S. Beckwith, was named executive vice-president.

International Harvester Co., Chicago, Ill., has announced that Monroe Rooks, former motor truck branch manager at New Orleans has been transferred to the Birmingham general line branch in the same capacity. Mr. Rooks will replace P. H. Baler, former assistant manager at Birmingham who will establish his own dealership at Macon, Ga., handling International Harvester equipment.

R. E. Solberg, former assistant manager of the company's order and distribution department has resigned to engage as an International Harvester dealer at Elk Point, S. D.

John R. Shoffner, Professional Engineer, Kittanning, Pa., has resigned as Chief Engineer for the Allegheny River Mining Co. and the Freebrook Corp. and its affiliated companies. His offices have been moved to the Empire Building.

Le Roi Co., Milwaukee, Wis., has appointed George Malvese & Co., Jericho Turnpike, New Hyde Park, Long Island, as exclusive distributor for the New York counties of Kings, Nassau, Queens, and Suffolk.

Gar Wood Industries, Inc., Detroit, Mich., has named Russell D. Hiller, Jr., district manager-general line in the territory of Texas, Oklahoma, and Louisiana. His headquarters will be in Tulsa, Oklahoma.

Kennedy-Cochran Company, Chicago and Hillside, Ill., has been appointed distributors for Bucyrus-Erie ⅜- to 2½-yard shovels, draglines, cranes, and dragshovels in northern Illinois and Indiana. Office headquarters of the Kennedy-Cochran Company are at 228 North LaSalle Street, Chicago, while a parts and service station is maintained at Mannheim Road (U.S.45) and Madison Street, Hillside.

The Four Wheel Drive Co., Clintonville, Wis., announces the appointment of A. R. Krug as zone sales manager for the states of Tennessee, Alabama, Florida, Georgia, South Carolina, and North Carolina.

Drott Manufacturing Corp., Milwaukee, Wis., announces the completion of their new office and manufacturing buildings at 4344 North Green Bay Ave.

Hugh B. Williams Manufacturing Co., Dallas, Texas, announces that The Joslyn Companies have been appointed distributors of the Hole Digger on a nation-wide basis.

Detroit Automotive Products Corporation, Detroit, Mich., is the new operating name of the firm formerly known as the Thornton Tandem Co.

R. G. LeTourneau, Inc., Peoria, Ill., announces the moving of its eastern sales office to Washington, D. C. where it will be under the management of O. A. (Jack) Williams who was named to the eastern sales managership. He will be assisted by Henry Cain.

New trade literature

Title: **Evans Thermo-Control Fan**
Subject: Questions and answers based on inquiries received from the field about Evans Thermo-Control Fan. Two-color 15-page booklet with cartoon-type illustrations.
Where to Get: Evans Product Company, Detroit, Mich. (Free).

Title: **"What Dryseal Pipe Threads Are and How They Work"**
Subject: An eight-page booklet containing information on the recently set up standard for improvement in pipe threads, known as Dryseal pipe threads. The booklet has information which explains what Dryseal pipe threads are, how they work, and recommended practices. It also carries charts and drawings which will be interesting to engineers, designers, and purchasing agents.
Where to Get: Weatherhead Co., 300 E. 131st St., Cleveland 8, Ohio (Free).

Title: **Soil Stabilizer Bulletin**
Subject: This bulletin describes the new P & H Single Pass Soil Stabilizer which is designed to make use of on-the-spot materials in building subgrades, secondary roads, airports, etc. Of particular interest to highway officials and road builders, the bulletin is fully illustrated.
Where to Get: Harnischfeger Corp., Milwaukee 14, Wis. (Free)

HELP WANTED

Dragline operators for work in Central America for large American Company. Good salary plus yardage bonus.
Good living conditions. Expenses paid to job site.
Machines from ½ to 2½ yards.
Excellent opportunity for two-man teams accustomed to working together.
Write today for full information about this outstanding opportunity. Box 3201.

Title: **Murex Type HTS**
Subject: A new type of electrode designed to prevent underbead cracking in the welding of "difficult-to-weld" steels is described in this 16-page bulletin. In addition to general descriptive matter, tables giving full data on the physical and chemical analysis of the Type HTS deposit in all standard electrode sizes are included. Various actual applications are also discussed along with the advantages which have accrued from the use of the type of electrode.
Where to Get: Metal & Thermit Corporation, 120 Broadway, New York 5, N. Y. (Free)

Title: **Vibrating Screens**
Subject: A 16-page bulletin on the use of "Vibrating Screens" in the pit, mine and quarry industries has been issued by the Pioneer Engineering Works. Fully illustrated, and with descriptive text, this booklet presents the complete line of Pioneer vibrating screens and gives details of construction, along with specifications on types and sizes.
Where to Get: Pioneer Engineering Works, 1515 Central Ave., Minneapolis, 13, Minn. (Free)

Title: **Around the Quarry with "Caterpillar"**
Subject: Generously illustrated, this 8-page folder graphically portrays the chores to be accomplished with diesel power in all-around quarry work. Actual scenes of stripping and excavating, cleaning the stockpile floor and the general quarry area, stockpile loading by track-type tractors, and other operations are shown.
Where to Get: Caterpillar Tractor Co., Peoria 8, Ill. Ask for Form 9364 (Free).

Title: **Caine Corr-Plate Steel Piling**
Subject: A handsome booklet that describes the use of Caine Corr-Plate Steel Piling for sewer work, bulkheads, retaining walls, dams, shore and flood protection and soil erosion projects. Diagrams, tables, dimensions and weights are given in this catalog to provide ease in figuring the requirements of piling jobs, selecting the amounts needed, and estimating the cost.
Where to Get: Caine Steel Company, 1820 North Central Ave., Chicago 39, Ill. (Free)

Title: **"Universal 546-P Portable Primary Crushing Unit"**
Subject: Besides describing the 546-P, a complete primary crushing unit, this bulletin also contains detailed information concerning its use in vari-

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. If no change in copy is desired, three continuous insertions are offered for the price of two. Read these instructions carefully. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Count your own copy to save delay. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January issue closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

MISCELLANEOUS EQUIPT.

For Rent or Sale

⅛ yd. Bucyrus 10-B dragline
½ yd. General shovel dragline
1 yd. Northwest shovel dragline
1½ yd. Koehring dragline, 65 ft. boom
2 yd. Page dragline, 90 ft. boom
3 yd. Monighan dragline, 110 ft. boom
5 yd. Monighan dragline, 140 ft. boom
7 yd. Page dragline, 115 ft. boom
20 yd. Marion dragline, 200 ft. boom

A. W. Nevers — Mt. Pleasant, Iowa

For Rent or Sale

D-8 Caterpillar diesel with 2¾ cu. yd. front end loader. Like new. $8500. Consider contract job.
Bucyrus-Erie "Red Arch" 2½ cu. yd. dragline bucket AX, weight 5500 lb. Like new, $850.
Hendrix LS 2½ cu. yd. dragline bucket. Like new, $750.
Hendrix SH 3½ cu. yd. dragline bucket. Like new, $1100.
Iowa portable crushing plant, 12"x20" vibr. screen, return elevator, V-belt Wauk. engine, A-1, $2750.
Woolridge BB-S cable scraper, 8- 11 cu. yd. New $3750.
International truck, KR-11, with 6 cu. yd. Galion dump bed. Like new, $4750.
Sterling, 18-ton, 6x4 drive, 6 cyl. Cumins diesel HB600. 5th wheel. Like new, $5500.
Austin-Western tandem roller, late model 5-8-ton, International gasoline. A-1, $2600.
Worthington 315 cu. ft. portable diesel air compressor. Rebuilt. Guaranteed, $3750.
I-R wagon drill, X-71, pneumatic hoist, D-2 mounting for 10 ft. changes. Like new, $850.
Dempster Dumpsters & Brooks Load Luggers, late model LF 200 with buckets. Came off government 1½ ton trucks. Good. Per set, $600.

M. Wenzel, 2136 Jefferson, Kansas City, Mo.

---

2 Tractors & Scrapers

Allis model L tractors with lights, starters, bumpers, cast guard pan, hydraulic hoists. One with Continental 7-yd. 2-wheel scraper model CS74. One with Baker 5-yd. 2-wheel scraper model 180. Good condition. Real buy. George M. Pendergast & Co., Milwaukee 4, Wis.

DRAGLINE SCRAPER, ½ Cu. Yd. SAUERMAN
Complete—New Condition—Heavy Duty
Price $250
Virginia Boat & Yacht Service
West Norfolk, Virginia

B-Erie 1¼-yd. gas-air shovel, GA-3, reblt.
B-E 52B 2½-yd. dragl.-shovs., diesel, elec.
Monighan 3 & 4-yd. walking draglines.
Marion 20-yd. dragline, elec., Mod. 5600.
Lorain 1-yd. shovel, gas, Model L-55.
B-E 50B shovels, diesel, electric, steam.
Porter, Vulcan 18-ton stm. locos., 36" ga.
Locos., 8 to 35 tons, gas, 24", 42", 56½".
25-yd. tractor dump trailers, gas, (3).
A-C gyratory crushers, 27", 16", 12".
Sturtevant #2 rotary fine-reduction crusher.
Hydroelectric gen. plant, 1000 KVA, 65' hd.
Derrick barge, 35 ton, 4 yrs. old, 100' bm.
Shovel front attach., 2½-yd., 52-55B, A-1.
Crane boom, 40', 1¼-yd., 46" base width.
B-E 50B parts, 60" hoist gear, drum shaft.
Boiler tubes, 236-1¾" OD by 60", 12 ga., new.

H.Y.SMITH CO., 828 N.B'way, Milwaukee 2, Wis.

Used Trailers For Sale
20 to 50 tons

LaCrosse	(Full)	Kingham	(Full)
Jahn	(Full)	Fruehauf	(Semi)
Rogers Bros.	(Semi)	Hughes	(Semi)

All In Excellent Condition

HUGHES TRAILERS CO.
1029 Brooke Blvd., Reading, Pa.

Used chain crowd shovel attachment for Bucyrus-Erie 37-B; 21' boom 16'-6" handle, 1½ cubic yard all cast dipper. Location: Nebraska. Box 3200

---

3 Koehring diesel Model 125, 12½ cubic yard capacity wheelers.
1 Allis-Chalmers Model. HD-14 pusher tractor. Box 3198

---

1 Bucyrus-Erie 37-B shovel front complete with boom, dipper sticks and bucket with all parts as taken from 37-B machine 25018. Condition excellent. Box 3192

For Sale—

SHASTA DAM
AGGREGATE PLANT AND
CONVEYOR EQUIPMENT

INCLUDING:

Late model GE motors, 200 hp., 1800 rmp., 2300/4000 volt, slip ring; complete with interlocking controllers.

Western gear reducers, 200 hp., 40 to 1 ratio, herringbone gears.

Dorr hydroseparator, 20' x 4', complete with drive unit.

8", 16" and 20" deepwell turbine pumps and one 3" x 4" two stage high head centrifugal pump. All complete with motors.

30" Bodinson tripper and trestle.

Misc. electrical equipment and supplies.

COLUMBIA CONSTRUCTION CO., INC.
Box 579 Redding, California

Surplus Swivel Hook Double Sheave Blocks

2 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheave bushed with self lubricating bronze bushings, grooved for ⅝" rope. Groove diameter 12¼" equipped with 100 lb. cheek weights. 2½" swivel hook. Approximate shipping weight 234 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

1 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheaves bushed with self-lubricating bronze bushings. Grooved for ¾" rope. Groove diameter 10½" equipped with 100 lb. cheek weights. 2¼" swivel hook. Approximate shipping weight 235 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

2 40 ton "American" 24" swivel hook double sheave block diamond pattern with cast steel sheaves grooved for ⅞" rope. Sheaves to be bushed with plain bronze bushings, with center bored sheave pin and ¼" Alemite hydr. grease fitting No. 1980 equipped with 300 lb. cheek weights and 5½" swivel hook. Total weight of block 1190 lbs. Dwg. BEFP 1-M-6560.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Surplus Hydraulic Press Stock Available For Immediate Shipment.

2 Beco Portable Hydraulic Presses — 100 tons capacity consisting of: Press cylinder (ram), 4 speed pump with high pressure globe valve, 5' 0" high pressure hose, 5' 0" oil return hose.
1 100 ton Press Frames, including:
1 Frame head
1 Cylinder back plate
4 Alloy steel back plate rods, 1" x 20" with 8 nuts
1 Frame base with tie rods and nuts
4 Alloy steel frame rods 1" x 48" with nuts
2 pcs. 10' 0" High pressure hose with fittings for 100 ton Press.

Bucyrus-Erie Company
South Milwaukee, Wisconsin

Complete new fairlead for Bucyrus-Erie 54-B. Located in Seattle. Will consider any reasonable offer. Box 3191

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3 yd. electric walker dragline.
2 yd. diesel walker dragline.
2 and 2½ yd. gas & electric drags.
2 yd. diesel drag. on trucks, 100' bm.
30 ton gas or diesel loco. crane.
Truckcranes, 25-30' bms., pneu. tires.
A-W 12-15 yd. scraper, with own motor.
Sauerman scraper hoists, 2 and 3 yd.
Misc. asphalt plants, Adnun pavers, etc.
Crushers—jaw, gyratory, rolls, etc.
Hardsocg elec. coal drill, 5" bit.
Fairleads—for Link-Belt K-55.
WANTED—Offers of good used equipment.

James Wood, 53 W. Jackson, Chicago 4, Ill.

One complete dragline front end for Bucyrus-Erie 54-B diesel shovel, including 80' boom, fairleads and 2½ cu. yd. type "AX" dragline bucket. This equipment used about 2500 hours. Located West Virginia. Box 3189

Complete backhoe attachment for Bucyrus-Erie 29-B. Excellent condition. Box 3196.

One set 54"x20" Garfield type crushing rolls complete with two 96" diameter x 15½" face pulleys. Capacity, 200 tons per hour with a 1" feed and a ½" product. Rolls built by Allis-Chalmers in 1931 and weigh approximately 109,000 lbs. Price $9,000 net F.O.B. Coleraine, Minn., without motors or controls. Box 3197.

New
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(For Sale continued on page 120)

ous types of set-ups for the production of aggregates, aglime, etc.

Where to Get: Universal Engineering Corporation, Cedar Rapids, Iowa. Ask for bulletin No. 56 (Free)

Title: **Hercules Products**

Subject: A new booklet listing Hercules chemicals and industrial explosives, and more than 50 industries which utilize these products is now available. Designed for easy reference, the products are first indexed according to various industries in which the chemicals and explosives are used and then according to chemical families.

Many of the applications for Hercules chemicals in plastics, paints, textiles, film, adhesives, paper, rubber, and insecticides are given in this well-illustrated booklet.

Where to Get: Hercules Powder Co., Wilmington, Delaware (Free)

Title: **"Standard Practices for Stationary Diesel Engines"**

Subject: Because of progressive development in the diesel engine manufacturing industry during the last decade, it has become necessary to revise the 1935 published edition of "Standard Practices." The new book is the product of member companies of the Diesel Engine Manufacturers Association which coordinated their engineering and sales departments and delegated representatives to rewrite the former treatise.

The book, soon off the press, is written primarily for consulting engineers, buyers and users of diesel engines, and manufacturers of engines, and of engine parts and accessories, and it contains 25 drawings and charts.

Where to Get: Diesel Engine Manufacturers Association, 1 North La Salle St., Chicago 2, Ill. (Price $2.50.)

Title: **"Buckeye Model 120 Service Trencher"**

Subject: This new eight-page bulletin covers the Model 120 trencher manufactured by the Buckeye Traction Ditcher Co. All specifications are given for the "120" which is a boom type trencher capable of digging a trench 18" to 48" wide and up to 11' 6" deep. Construction details are shown and numerous jobs are illustrated.

Where to Get: Buckeye Traction Ditcher Co., Findlay, Ohio (Free)

Title: **Simplex Jacks**

Subject: A 64-page catalog (No. 45) of Simplex Lever, Screw and Hydraulic Jacks in which hundreds of jacks of conventional and special types, in sizes from 3 to 100-ton capacity, are described with specifications including dimensions, capacities, weights, etc.

Included are a number of items which were not produced in wartime because of government limitations, but which are now available. Also shown are recent additions to the Simplex line such as 30 to 50-ton hydraulic jacks for heavy lifting, and the new Track Shifter which provides a labor-saving method of lining railroad track.

Where to Get: Templeton, Kenly & Co., 1020 South Central Ave., Chicago 44, Ill. (Free)

Title: **"Universal Welded Base Roller Bearing Jaw Crushers"**

Subject: A new bulletin (No. 4) covering the line of WRB series jaw crushers that gives structural details and complete specifications.

Where to Get: Universal Engineering Corp., Cedar Rapids, Iowa (Free)

Title: **Motor Repair Equipment**

Subject: A new 10-page illustrated catalog that describes motor maintenance tools to be used in conserving present equipment which is so necessary due to the great scarcity of motors and generators. Equipment described includes: commutator and slip ring resurfacing stones, polishing stones, commutator saws and milling cutters, carbon brush seaters, voltage and circuit testers, types of wire insulation strippers, etc.

Where to Get: Holub Industries, Inc., Sycamore, Ill. (Free)

Title: **Mines Register**

Subject: This latest edition of Mines Register has been completely revised and brings information up to date on mining properties in the Western Hemisphere. Containing descriptions of approximately 4,500 active mining companies and the listing of 25,000 inactive mining companies, the book is cataloged for easy use. Each report contains a short history of the company, its financial structure, description of its mining properties, its production type of equipment used, the officers and directors of the company and names of the mining engineer, manager, superintendent and purchasing agent.

Where to Get: Atlas Publishing Co., 425 W. 25th St., New York 1, N. Y. (Price $20.00)

Title: **Euclid Loader**

Subject: A new catalog folder that describes the improved model of the Euclid Loader which is used in the loading of large hauling equipment for such work as building dams, airports, highway and railroad construction, industrial grading, etc. The folder, Form No. 410, contains more complete technical information than the catalog which it supersedes.

Where to Get: The Euclid Road Machinery Co., Cleveland 17, Ohio (Free)

Title: **Heavy Duty Service**

Subject: This illustrated folder describes the "U" series of the Four Wheel Drive five-ton trucks. Besides giving detailed views of some of the truck's major features, the folder depicts the varied uses of the truck in industry.

Where to Get: The Four Wheel Drive Auto Co., Clintonville, Wis. (Free)

For Sale

(Continued from page 119)

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